COLUMBIA LIBRARIES OFFSITE
HEALTH SCIENCES RESTRICTED
HR00539287

American dental surgeon.

Serial v.26
A 1906
copy 1

Columbia University
in the City of New York
School of Dental and Oral Surgery

Reference Library

Digitized by the Internet Archive
in 2014

https://archive.org/details/dentalsummary2619unse

THE

Dental Summary

EDITED BY
L. P. BETHEL, M. D., D. D. S.
COLUMBUS, OHIO

VOL. XXVI.

PUBLISHED MONTHLY BY
THE RANSOM & RANDOLPH CO.
TOLEDO, OHIO

75

INDEX TO VOL. XXVI.

A

Page

Abraded Incisors or Cuspids—Cavity Preparation for.............................T. P. Hinman 935

Abscess Symptoms—Alveolar.........................G. V. Black 605

Abscess—Treating an Alveolar....................Arthur D. Black 849

Abscess with Fistula—Chronic Alveolar .... F. G. Worthley 545

Abscessed Teeth—Treatment of.......................G. M. Mullen 740

Abscesses and Their Treatments—Some Pathological Changes in Alveolar ....Geo. W. Cook 270

Abscesses—Drainage of ....G. V. Black 853

Acid Bottles—Dish for............. 536

Aconite—Strength of Tincture of.....................J. P. Buckley 682

Address—President's ....R. S. Simpson 249

Address—President's ....J. F. Stephan 587

Address—President's ....S. D. Ruggles 592

Address—President's ....G. F. Bowman 594

Address—President's ....John Quincy Byram 641

Address—President's ....A. Hugh Hipple 745

Adrenalin Chloride—The Use of Inadvisable ....E. T. Loeffler 62

Air—Practical Use of Compressed.. .... Geo. Zederbaum 604

Alcohol—Use of in Desiccating Cavity 852

Amalgam—Dental....F. J. Spargur 278

Amalgam Fillings—Why They Fail ....N. K. Garhart 653

Amalgam—Rules for the Use of....................J. D. Patterson 131

Anesthetics—Can Accidents and Failures be Avoided in the Administration of.............................Egbert T. Loeffler 343

Anesthetics Useful in Dentistry....................A. C. Hewett 282-362

Anchorage—The Step, and Its Indications ....J. F. Wallace 293

Page

Anchored Denture—The Beauman ....Edward C. Mills 865

Anesthesia—High Pressure as Compared with Cataphoresis and Nitrous Oxide and Oxygen.......................D. H. Ziegler 107

Anti-Flux 756

Antrum of Highmore—Diseases of the...............F. M. Barnes 354

Appeal—An ....F. W. Stiff 255

Arsenic—To Cement, in Cavity Without Pressure..............................C. B. Warner 535

Artificial Dentures—Retention of ....G. H. Wilson 930

Asepsis in Operative Dentistry.....................B. Bridgforth 187

Association—Indiana State Dental 639

B

Backings—A Guide to Punch Holes in ....R. L. Hesser 754

Backings—Punching Holes in..........................S. Preston 51

Bacterial Efficiency of Certain Mouth-washes......A. R. Ross 892

Band—To Remove from Model.....................F. W. Franklin 533

B. B. B............Horace Warren 203

Bedside Dental Treatment—Methods and Equipment for...........................H. T. Smith 888

Betel-nut Chewing......S. D. Boak 330

Bite—A Method of Taking the.................Frederick H. Berry 844

Bite that Must Be Correct—How to take a..........Richard Kessel 606

Borax—To Prevent Bubbling of.... 56

Brackett Table Cover—An Excellent..............C. F. Graham 453

Bridges—Extensive..Hart J. Goslee 931

Bridge—Removable Porcelain....................Harris R. C. Wilson 438

Bridge Teeth—Method of Tipping.....................F. S. Miller 297

Bridge-Work—Removable ....Dr. A. J. Sawyer..... 846

Bridges—Fusing of Porcelain...........................J. E. Nyman 131

Bridges—Mounting of Porcelain...................Hart J. Goslee 133

Page

Bridges—Occlusion for....................S. H. Voyles 453

Bridges—Porcelain................F. E. Cheesman 53

Bridges—Saddle........J. D. White 58

Bridges—The Fusing of Porcelain..................J. D. White 132

Broach-Holder—Aseptic................C. Boyd Powell 374

Burs and Mandrels..R. H. Manning 294

C

Campho-Phenique as a Local Anesthetic.....Burton Lee Thorpe 55

Carving Wax for Crown and Bridge Work, and Other Uses................C. Boyd Powell 457

Cast for Vulcanite Plate—Scraping the ....E. M. Kittig 850

Casts—Repairing Fractured..................S. M. Weeks 62

Cavities for Metallic Fillings—Preparation of......G. V. Black 548

Cavities—Operative Procedure for Excavating Sensitive................H. L. Schaffner 52

Cavities—Preparing Sensitive....................J. W. Gale 51

Cavities—Proximal.....F. B. Noyes 757

Cavities Should Have Straight Buccal and Gingival Margins—Reasons Why...J. F. Wallace 296

Cavity Preparation and Manipulation of Non-Cohesive Gold in Cervical Third to One-half of Approximal Cavities................H. A. Shannon 885

Cavity Preparation....Clyde Davis 313

Cement Information—Some Practical..............W. V. B. Ames 726

Cement—To Carry a Small Portion of ....W. R. Barnes 374

Clamps or Ligatures—Use Care in Placing 851

Clasps—A Method of Making................W. D. Easton 457

Clasps for Partial Lower Dentures................L. P. Haskell 851

Cocaine as an Anesthetic................G. F. Ambrose 935

Compressed Air—Use of............George Zederbaum 936

Conservatism.......H. H. Harrison 632

Crown and Bridge Articulator—How to Improve Your..............A. F. Donahower 853

Crown and Bridge-Work...................D. A. House 10

Crown—A New Method of Making a Porcelain-Faced..D. H. Young 601

Crown—A New Root-End Preparation for a Porcelain..................M. C. Tracy 679

Crown—A Simple Method of Making a Two-Piece Gold......... 679

Crown Facings—Restoring Broken............W. G. L. Spaulding 681

Crown for Molars—A Simple and Practical Porcelain................Ned A. Stanley 130

Crown-Making—New Process in.............H. Herbert Johnson 599

Crown—Method of Constructing Articulated Gold..............E. M. Martindale 444

Crown Pin—Setting a Davis..................J. B. Merrick 852

Crown—Richmond..............Edward C. Mills 447

Crown—Selecting a....P. P. Dove 853

Crown—Set with Gutta-Percha—Removal of ....Dr. Benson Sellery 218

Crown—The Half-Collar..................R. M. Sanger 605

Crown—The Much-Abused All-Metal Shell......C. J. Grievers 85

Crown—To Make a Temporary, in Ten Minutes.....C. F. Graham 373

Crown—To Prepare the Floor of the Cap for a Porcelain..................L. A. Arnold 761

Crowning a Root Decayed Below the Gum Margin..........Dr. W. A. Brownlee 847

Crowns—A Method of Obtaining Pressure in the Construction of Porcelain...C. S. Starkweather 92

Crowns or Bridges—The Heffelbower Method of Replacing Facings on..........J. E. M. Heffelbower 57

Crowns—Sense of Feeling a Guide in Fitting Band................J. C. Edington 217

Crowns—Weak Points in Post, and How to Overcome Them............Burton Lee Thorpe 7

Cusps—Swaging.....H. L. Vaughn 533

D

Dental Credulity, Avarice and Professionalism...Dr. E. W. Ream 207

Dental Profession—Nobility of the ....W. T. Chambers 347

Dental Progress Needed—Intellectual............W. T. McLean 173

Page

Dental Science and Literature—Report of the Committee on...... ....H. C. Sexton 650

Dentine—Obtunder for Sensitive... ....J. P. Buckley 60

Dentine Treatment—Sensitive..... ....George Gow 600

Dentist—Mistakes of a Country... ....R. D. Wallace 175

Dentistry and Medicine—Preventive............J. W. Clemmer 414

Dentistry—Little Things in....... ....F. H. Fagan 288

Dentistry—The Mechanical Side of ....D. P. Sims 189

Dentistry—The Possibilities of Modern.........F. W. Knowlton 340

Dentistry to the Allied Professions—The Relationship of.... ....E. L. Farris 666

Denture—Adaptation of Partial.... 51

Denture—A Method for Investing and Packing a Rubber........ ....H. S. Miller 680

Denture—An Anchored............ ....J. B. Beauman 777

Denture—Method of Resetting Upper, when the Bite Is Satisfactory ....J. D. Odeneal 620

Dentures—The "Optimus" Method of Flasking and Packing Rubber................H. S. Miller 216

Dentures—Partial Lower ....L. P. Haskell 454

Dentures—Retention of Artificial.. ....Geo. H. Wilson 1

Difficulties in Operative Dentistry —Some of My Chief.......... ....R. H. Ralston 510

Difficulties in Practice............ ....Arthur I. Brown 513

Difficulties in Practice............ ....J. H. Burrows 515

Dioxide of Hydrogen in a Maxillary Sinus—Do Not Use....... ....M. L. Rhein 53

E

Electro Gild Orthodontia Appliances—To.........J. Q. Bryam 294

Enamel—Cracks in the............ ....C. E. Brown 757

Equation—The Personal........... ....J. D. Patterson 94

Erosion—Discussion on............ ....Henry Barnes 835

Erosion—What Shall We Do with Our Cases of?....W. G. Hamm 491

Page

Esthetic Lines—Grinding the Teeth to Produce ....H. L. Schaffner 298

Examiners—Report of the Indiana State Board of Dental......... 661

Examiners—Report of the Ohio State Board of Dental......... ....H. C. Brown 359

Extraction of the Teeth Under Prolonged Anesthesia with Nitrous Oxide and Oxygen Administered Through the Nose...... ....C. K. Teter 93

F

Facers—To Sharpen Ottolengui.... 532

Facing-Spots in Pink Rubber...... ....F. A. Graham 51

Facings—Grinding and Backing ....Bush Jones 765

Facings—Protection for........... ....A. E. Matteson 761

Filling Material—Cohesive Tinfoil as a.............Geo. W. Clapp 444

Filling Materials for Dental Prophylaxis—The Selection of..: ....N. S. Hoff 423

Filling—The Adhesive............. ....Joseph Head 295

Fillings—Successful Gold.......... ....H. B. Tileston 233

Funnel—The Dental............... ....G. S. Junkerman 473

G

Gates-Glidden Drill—Removal of a Broken ......Dewey D. Smith 888

Gold at Cervix—Mat of........... 756

Gold Filling vs. Gold Inlay........ ....Thos. P. Hinman 532

Gold Inlays—Their Application and Construction....F. R. Henshaw 714

Gold Inlay—The Humanitarian Aspect of the................... ....Henry Barnes 718

Gold Scrap—Converting into Plate ....G. E. Franke 375

Gum Sections with Prosthetic Porcelain—The Making of........ ....W. B. Fahnestock 438

Gum Tissue from a Cavity—To Remove a Morbid Growth of..... 376

Gutta-percha as a Mounting Medium for Bridge-work........ ....Hart J. Goslee 931

Gutta-Percha in Chloroform—To Hasten the Solution of........ 298

H

Page

Heat as a Factor and Aid in Treatment ....Oliver Martin 758
Hemorrhage—Alveolar Dental.... ....E. M. Fisher 267
Hemorrhage Following Extraction of Teeth—Treatment of....... ....Sinclair Tousey 755
Hints—Practical ....E. T. Loeffler 397
Holder for Vulcanite Rubber while Softening—A...A. C. Wellman 536
Humanitarian Dentistry — Some Reasons for Success or Failure in the Practice of............ ....W. G. Ebersole 783
Hygiene—Dental ....Wm. Pilcher 258
Hygiene—Oral, a Necessity to Health.....Burton Lee Thorpe 837
Hypodermic Needles—To Keep from Rusting..........C. E. Conley 852

I

Impressions and Impression Materials..........H. A. Shannon 78
Impressions—Partial....D. T. Hill 621
Impressions—Partial Lower....... ....L. P. Haskell 852
Impressions—Taking Lower....... ....C. H. Pearce 451
Incisor Tip—Restoration of a Broken.......W. S. Waterbury 134
Infection—Oral....W. H. Whitslar 568
Inlay—A Gold 293
Inlay—A Method of Making a Gold .... Henry Barnes 84
Inlay—Gold ....Alden Bush 153
Inlay-Making—The Color Problem in Porcelain.......J. Q. Byram 598
Inlay—The Technique of Making a Porcelain .....G. F. Woodbury 398
Inlay—To Make a Simple Cavity for Porcelain ....Joseph Head 127
Inlay—To Obtain a Roughened Surface for Porcelain......... ....M. D. Littig 129
Inlay to Restore Corner of Central or Lateral—A Method of Making ....A. C. Greenlee 92
Inlay—To Roughen the Surface of a Solid Gold......G. S. Hershey 127
Inlay—To Set an....Geo. T. Banzet 766
Inlay—Undercutting for........... ....M. L. Rhein 128
Inlay with Swaged Occlusion—A Gold..............P. T. Barber 54

Page

Inlay Work—A Method of Manipulating a Positive Matrix for.... ....F. S. Morrison 83
Inlay Work—Porcelain .... Edward Eggleston 125
Inlays—A Hint on Cavity Preparation for............C. S. Hardy 130
Inlays—A Method of Making the Retention of, in Their Cavities More Secure.....C. B. Rohland 530
Inlays—A New Method of Making Retaining Points in Porcelain .... B. Platschick 59
Inlays—General Rules for Cavity Preparation for Gold.......... ....T. P. Hinman 529
Inlays for Molars and Bicuspids—Gold ....T. P. Hinman 457
Inlays—Gold in Abraded Surfaces ....H. P. Harrell 452
Inlays in Posterior Teeth........ ....G. C. Marlow 680
Inlays—Reasons Why Porcelain Should Be Used in Posterior Teeth ....G. C. Marlow 527
Inlays—Some Cavity Preparations for Porcelain.....H. C. Kenyon 73
Inlays—Stress on......M. L. Rhein 133
Inlays—The Perfect Retention for Gold............A. H. Fleming 526
Inlays—When to Use Porcelain.... ....Willis A. Coston 533
Instruments—To Remove Coating from After Boiling........... ....J. Q. Byram 755
Instrument Wipers................ ....A. C. Wellman 536

J

Jaws in the Mastication of Food—The Movement of the.......... ....A. O. Hunt 116

L

Labium Frenum—Surgical Operation of the......T. G. Bradford 663
Laboratory Light..Dewey D. Smith 800
Lathe Cone—To Sharpen A....... ....C. F. Graham 454
Lathe Cone—To Sharpen a........ 537
Legislation—Dental ....H. W. Campbell 262
Ligating Rubber Dam—To Prevent Pain in 854
Liquid Flux...........H. E. Davis 936
Local Application Before Inserting Hypodermic Needle .... Frank Pollard 537

M

Page

Mandrel—To Secure a Worn.......................A. C. Wellman 537

Mandrels—Utilize Your Worn.....................J. E. Cummins 754

Mandrels—Worn....A. C. Wellman 681

Matrices—A New and Valuable Method of Making.....................R. Ottolengui 753

Matrices—Metal for..............................G. W. Schwartz 50

Matrix—Method of Using Platinum, Without Investing..............................C. Van Wyck 55

Matrix—Preparing Platinum for the 597

Mental Influence in the Dental Office ....W. H. Whitslar 801

Metallic Fillings—Cavity Preparation for.......C. E. Woodbury 872

Methods and Means...H. E. Davis 762

Mistake Impossible................ 61

Mistakes of City Dentists...........................F. J. Spargur 41

Modeling Compound—Old...........................G. G. Brown 934

Molars and Bicuspids—Method of Rotating.....Wilson G. Foster 442

Molars—First Permanent............................E. J. Perry 754

Molding Ring........L. P. Haskell 534

Mouth Beautiful—The.............................Alice G. Harvie 621

Mouth-Breathing Due to Nasal Obstructions..........D. W. Flint 238

Mouth-washes—The Bacterial Efficiency of Certain..A. R. Ross 892

N

Nausea in Impression Taking—To Prevent...........H. E. Davis 597

Non-Cohesive Gold—Cavity Preparation and Manipulation of, in Cervical Third to One-half of Approximal Cavities ....H. A. Shannon 885

O

Occlusion—The Importance of Normal...............L. P. Bethel 479

Occlusion—Unfavorable ....Hart J. Goslee 534

Odontalgia—Treatment, of with Chloral Hydrate ....Dr. Rabbagliette 757

Oral Hygiene—Teaching, in the Public Schools ....W. O. Talbot 184

Oral Prophylaxis and a Plea for Its Adoption ....Grace P. Rogers 732

Orthodontia—Early Age for Correction ....T. J. Bradford 393

Orthodontia—The Simple Cases of.............Varney E. Barnes 811

P

Pain—Unnecessary—Dental Operation ....J. R. Markel 351

Pins from Roots—Removing...................Thos. J. McGernon 292

Plaster of Paris—To Set Promptly ....C. F. Graham 454

Plates—To Polish......E. T. Evans 851

Plates—To Prepare Aluminum, for Rubber...........L. P. Haskell 849

Plates—To Prevent Warpage of... 129

Pluggers — Why Round-Faced Should Be Employed............................D. M. Cattell 297

Polishing Material—A..J. K. Willis 756

Porcelain—Bubbles in ....J. D. Patterson 850

Porcelain Changes Color in Fusing—Why..........G. W. Cook 934

Porcelain Facings—Bryant System of Attaching, without Removing the Bridge from the Mouth......J. Homer Huschart 449

Porcelain—Fusing.....J. Q. Byram 854

Porcelain in Large Cavities—The Utility of..........L. E. Custer 724

Porcelain, Its Use and Abuse.....................D. O. M. Le Cron 319

Porcelain Surfaces for Solder Work—Protecting.....Henry C. Lee 851

Porcelain to Match the Tooth Substance by the Help of the Pyrometer—The Shading of.....................Weston A. Price 443

Practice—Some Ideas I Have Found to be a Help in...........................W. H. Spaulding 412

Prophylaxis—Its Effect Upon Dental Practice and Our Duty Regarding It.......C. A. Hawley 420

Prosthetic Dentistry..E. T. Wright 244

Prosthetics......J. Maurice Crosby 583

Pulp Chamber—Excision of a Portion of Dentine for Complete Exposure of the, for Subsequent Treatment of Molars.....................T. C. Trigger 215

Pulp—Constructive Diseases of Dental.........Charles Kniese 26

Pulp Devitalization—Point of Approach for ....Dr. G. H. Kittle 61

Page

Pulp Removal—A Suggestion for ....M. L. Rhein 291

Pulp—Treatment of the Dental... ....J. D. Whiteman 579

Pulps—The Art of Capping....... ....G. W. Clapp 164

Pulps—Treatment of Putrescent... ....J. P. Buckley 56

Pumice on Tooth Structure—Experiments as to the Effect of .... Joseph Head 682

Putrescent Pulp—To Deodorize.... ....H. E. Davis 936

Pyorrhea Alveolaris............... ....Carl D. Lucas 576

Pyorrhea Alveolaris............... ....T. A. Hardgrove 528

Pyorrhea Alveolaris Treatment.... ....J. H. Nicholson 218

Pyorrhea Alveolaris Treatment... .... Robert Good 128

Pyorrhea—Treatment of.......... ....T. W. Brophy 52

R

Richmond Metal—The Use of..... .... J. P. Root 129

Root-Canals—Fillings of 291

Root-Canals—Kalium-Natriam Treatment of ....M. L. Rhein 213

Root-Canals—Tannic Acid and Iodine Filling for.............. ....N. N. Wycoff 53

Root Canal Treatments and Fillings—The Rationale of........ ....L. A. Salisbury 909

Root-Filling.........J. P. Buckley 57

Root-Filling—Immediate, a Mistake ....T. B. Noyes.... 52

Root-Filling—Immediate ....Geo. W. Whitfield 760

Root-Filling—Immediate, Not Advisable..........S. M. Weaver 455

Rosin Soap for Engine Cord...... 755

Rubber Dam in Setting Bandless Crowns on Anterior Teeth—The Use of the............... ....Dr. J. S. Danforth 847

Rubber Dam—To Stop Puncture in a...............A. C. Peterson 535

Rubber Dam—To Stop Puncture in a............Arthur C. Preston 537

Rust from Instruments—Removal of 50

Rust from Instruments—To Remove 373

Rust from Instruments—To Remove 766

S

Page

Separating Medium 50

Silex in the Muffle................ 758

Silver Nitrate—Care in the Use of ....Otto Holinger 933

Soap-Antiseptic Liquid............ ....Dr. Wormer 535

Solder—Flowing ....Thomas P. Hinman 531

Solder—Gold vs. Platinum......... ....Hart J. Goslee 760

Solder Pilot—A.....A. C. Wellman 536

Solder—To Restrict Flow of....... ....F. W. Franklin 533

Soldering—Cold 756

Soldering of Aluminum........... 755

Soldering Without Blowpipe...... ....L. G. Noel 54

Somnoform............C. C. Miller 32

Sore Tooth—Supporting While Drilling ....T. L. Gilmer 294

Spatula—A Hickory............... ....D. R. Phillips 294

Splint for Retaining Loosened Teeth—Fixed ....E. A. Vaughan 759

Splints for the Interior Teeth.... ....R. I. Blakeman 796

State Dental Meetings—What I Have Learned from the...... ....Dr. E. A. Meservey 196

Sterilization and Disinfection as Related to Water, Instruments and Soft Tissues, Including Putrescent Pulps...A. W. Harlan 923

Sterilization of Instruments...... ....E. M. Kapitan 766

Sterilization of the Hands........ 535

Sterilization—The Farce in....... ....W. D. Miller 80

Sterilizing Instruments—New Mode of .... A. W. Harlan 532

Success of a Dentist—Some things Essential to the....Dr. Brown 36

Surgery—A Review............... ....Dr. W. E. Davidson 828

Swaging with Moldine, Both the Matrix for Gold Inlay and Backing for Facings......... ....J. K. Douglas 92

Syringe—A Simple Protector for the Hot-Air ....F. C. Brush 451

Syringe and Instructions—A....... ....J. P. Root 757

T

Teeth—As Essentials or Non-Essentials to Civilized Man...... ....C. M. Wright 334

Page
Teeth—During Pregnancy, the Care of the.......E. M. Kettig 160
Teeth—How to Extract Painlessly ....F. H. Hood 761
Teeth of Children—Importance of Early Attention of the....... ....L. P. Bethel 697
Teeth—Missing, in their Relation to Orthodontia and Bridge-Work.......Milton T. Watson 840
"The Great Amalgam Fallacy"—The Fallacy of......J. P. Root 167
Tinfoil as a Labor-Saver—Cohesive ....Geo. W. Clapp 629
Tinfoil—Clinic with Improved.... 450
Tin for Children's Teeth.......... ....H. L. Ambler 848
Topical Remedies—How to Apply 682
Tray—How to Make a Right and Left Lower Partial........... ....C. Wesley Sufpin 456

U

Utensils—To Remove Wax from... ....G. G. Brown 934

V

Vacuum Chambers....E. M. Kittig 850
Vulcanite—Attaching, to Metal Plates..........C. N. Thompson 761
Vulcanite Plate—To Replace Tooth on...............H. T. Harvey 534
Vulcanizing—To Prevent Teeth from Receding from the Rubber in ....C. Soulard 56

W

Water Heater—An Electric...... ....Dewey D. Smith 243
Wheel—A Good Polishing........ ....A. C. Wellman 537
Work Area.........Isolation of... ....H. M. Semans 617

Z

Zinc-Renewing.......W. S. Easton 758

Page
CORRESPONDENCE—

New Army and Navy Legislation.. 139

NEW PUBLICATIONS—

Long's Dental Materia Medica and Therapeutics 66
Orthodontia or Malposition of the Human Teeth, Its Prevention and Remedy 223
The Dentist's Magazine........... 66

SOCIETIES—

67-146-224-305-381-461-538-767-851-937.

AFTERMATH—

68–147-227-307-387-465-540-610 688-770-860-939.

EDITORIALS—

A Public Dental Library.......... 459
Army Dental Legislation......... 301
A Worthy Cause................. 458
Better Society Organization....... 607
Can a Dentist be Judged by His Sign 377
Dental Surgeons for Army and Navy—New Legislation 137
Educate the Press............... 299
Errata 222
Retrogression or Advancement—Which? 135
Scopolamine-Morphine Method of Inducing Anesthesia 219
The Cotton Exchange............. 221
The New Process Man and the Gullible Dentist 683
The Prince and the Dentist....... 63
OBITUARY—
Dr. Charles C. Chittenden......... 144
Dr. William Van Hon............. 144
Dr. J. S. Boak.................... 855

PRESS OF
THE FRANKLIN CO., TOLEDO, OHIO

REGULAR CONTRIBUTIONS

RETENTION OF ARTIFICIAL DENTURES.

BY GEORGE H. WILSON, D.D.S., CLEVELAND, OHIO.

Concluded from Page 831 December Summary.

Forms and material for clasps: Clasps are made of either round or flat clasp gold. A good formula for clasp gold is pure gold twenty parts; pure copper two parts; pure silver and platinum of each one part.

ROUND CLASP.

Should be made of eighteen or possibly twenty gauge clasp gold wire, and may be used either as a single or double strand (See Fig. VI). The advantage claimed for the wire clasp is the slight contact with the tooth. The disadvantages are, the thickness of the wire will often prevent it being placed between the natural teeth; it has not the retention power of the flat clasp unless it is placed very near the center of leverage; this however does not apply to the double strand wire clasp; and it is often more unsightly than the flat clasp.

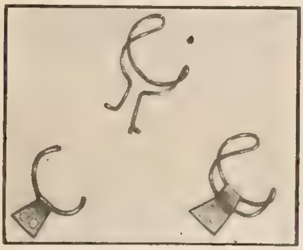


Fig. VI

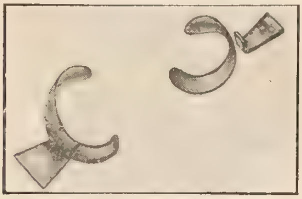


Fig. VII

FLAT CLASP.

Is made of twenty-six gauge clasp gold, and from one-sixteenth to one-fourth inch in width, usually about one-eighth to three-sixteenth inch (See Fig. VII). The advantages of the flat clasp are: First, its thinness when desirable to pass between the natural teeth, the necessary space can be secured by slight wedging; second, there is no form of clasp that is so universally applicable; third, it gives great stability to denture and fourth, it is not liable to be broken. The disadvantage is: That the broad surface of tooth substance covered is favorable for decay, and necessitates the best judgment upon the part of the operator in placing the clasp and care upon the part of the patient to observe cleanliness.

HALF-ROUND CLASP.

The half-round clasp is made of half-round clasp gold wire and has the disadvantages of both the round and flat clasp without their advantages.

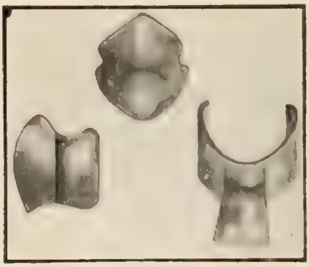


Fig. VIII

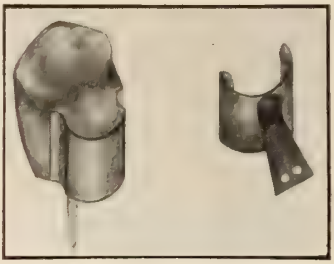


Fig. IX

RIGID CLASP.

These clasps or clamps may be made of flat clasp metal or eighteen carat gold plate, they are usually as broad as the length of the tooth will permit, they are of sufficient length to cover at least one side and two angles of the tooth, and the ends are either bent L shape to slide over parallel longitudinal ridges or cleats upon gold crowns, (Bryant method See Fig. VIII). or they are provided with thick ends adapted to parallel longitudinal grooves in preferably porcelain crowns (Swartz method), (See Fig. IX).

FERRULES.

Ferrules are especially indicated when the natural teeth are remaining upon one side of the maxilla and absent upon the other. The ferrule is superior to the spring clasp for this class of cases because of its unyielding form. Where conditions are favorable, two or possibly three may be used to advantage. Sometimes extensions may be attached to the buccal surface of the ferrule to act as clasps upon the proximating teeth. Should there not be sufficient space between the tooth to be ferruled and the proximating teeth to pass a twenty-six gauge plate, it will be necessary to gain such space by wedging with tape until the space is obtained; it will then be maintained by the ferrule, (See Fig. X).

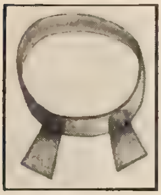


Fig. X

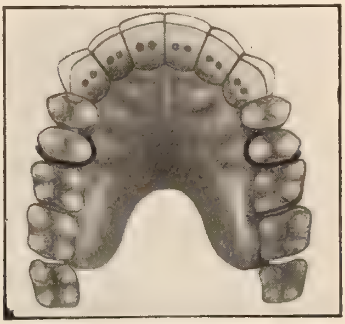


Fig. XI

PRINCIPLES INVOLVED IN RETENTION.

There are two propositions to be considered, first, balancing the plate and second, gripping the tooth or teeth.

BALANCING THE PLATE.

We may consider each side of a partial plate as a lever, the tooth clasped as the fulcrum, and the plate extending either way from the clasp as the arms of the lever (See Fig. XI). Fig. XI represents a partial upper of a horse-shoe shape carrying the six anterior teeth and the wings extending backward to the third molars. It is easy to imagine what the result would be if we should attempt to retain the denture by single strand wire clasps placed upon the third molars; also if we should replace the wire clasp with a broad flat clasp accurately fitted to the surface of the tooth. With the broad clasp the anterior portion of the plate would be held in place for a time at least, but the long lever and the weight of the teeth would place such a strain upon the third molars that they would become very sore and loosen in their sockets. If these clasps are replaced with single strand wire clasps upon the second bicuspids, or a flat clasp, the plate will be securely held in place and with the least strain upon the clasped teeth, *because the clasps are at the center of leverage.* This will demonstrate why it is necessary to extend the plate some distance back of the clasped teeth. The center of leverage will also explain why if a clasp is placed upon a third molar upon one side, a clasp should be placed upon the cuspid upon the other side of the arch. It is obvious that the best results are obtained when there is a tooth for clasping upon each side of the mouth. While the two teeth for clasping are most desirable, if the conditions for retaining a denture by adhesion by contact are very unfavorable, a single bicuspid or molar may be of much assistance. In the mandible even a single cuspid should be utilized.

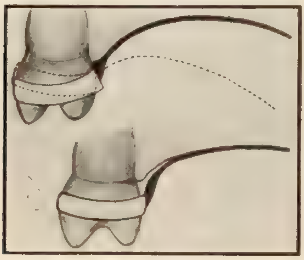


Fig. XII

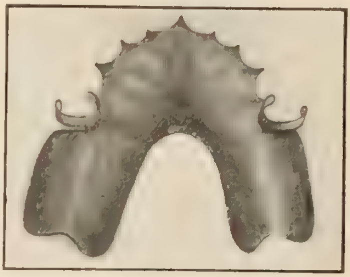


Fig. XIII

GRIPPING THE TOOTH.

There are many failures in clasp dentures due to carelessness or slight accidents in adjusting the clasp to the tooth. The clasps should be so adjusted to the teeth that there will be no lateral strain. Theoretically, when the mouth is at rest there should be no strain upon the clasped teeth because the upper plate even though a narrow rim, should have sufficient adhesion by contact to sustain its weight, the lower plate would be held in place by gravitation, and the clasps should be a reserve force for the work (Fig. XII-*a*). Fig. XII-*a* represents a broad flat spring clasp improperly adjusted. The linguo-cervical edge of the clasp rests upon the tooth, while the linguo-morsal edge is some distance from the tooth. When the arms of the clasp are bent inward so as to cause the clasp to grip the tooth, the linguo-morsal edge will approach the tooth and the base plate which represents the long arm of a lever will be tilted away from the vault of the mouth, as shown by the dotted lines. If the reverse of these conditions exist (See Fig. XII-*b*), that is, the linguo-morsal edge rest upon the tooth and the linguo-cervical edge stands away from the tooth, then when the spring of the arms draws the clasp firmly to the tooth, the plate will be held securely against the vault of the mouth; but there will be a lateral strain upon the tooth tending to move the apex of the root towards the vault. If either of these imperfect conditions is to exist, it had better be the latter, because the denture will be held firmly in place and in time the tooth will be adjusted to the existing conditions; although sore during the orthodontic process.

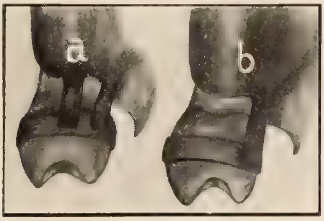


Fig. XIV

ADAPTATION OF THE CLASP TO THE TOOTH.

There are two methods of adapting clasps: First, the clasp is formed by pliers to approximately a close adaptation, so that it will be uniformly supported, but not so close but that the fluids of the mouth can pass freely between the metal and tooth. Second, a piece of thin pure gold or platinum 36 gauge is accurately fitted to the tooth, a strip of clasp metal is then adjusted as closely as possible with pliers to the burnished metal and the two united with wax; they are then sprung away from the tooth, invested and thoroughly soldered together. It is possible with this perfect adaptation of the clasp to the tooth, the secretions being retained by capillary attraction and not changed by the fluids circulating in the mouth, that disintegration may be invited; but with proper cleansing and removing the denture at night there will rarely be any ill effects.

TIME OF WEARING AN ARTIFICIAL DENTURE.

During the time the patient is acquiring the habit and knack of using an artificial denture (usually about six weeks), it should be removed from the mouth only for cleansing; after that, it is better for the contiguous tissues if the denture is removed upon retiring.

FORMING THE CLASPS.

Clasp gold is very crystalline and when it is rolled from the ingot into plate the crystals are elongated into fibers. The metal is very easily split between the fibers, but across the fibers there is good strength and flexibility; for these reasons the fibers should run lengthwise of the clasp, that is, around the tooth. Before forming the clasp the metal should be annealed by heating to a cherry-red heat and permitted to cool slowly.

PLIERS.

Two pair of pliers are required. One (we will call number one) with hawk-bill shaped beaks, the under smaller than the over beak and oval or round in its cross section, while the over beak should be flat on the under surface of its cross section. The other pair of pliers (number two) is the ordinary clasp forming variety, having a round and a concave blade. Number one pliers is for general utility and with it most of the shaping of the clasp is done. They give the concavo-convex form to the cross section of the clasp, and in connection with the fingers give the general outline of the tooth. The number two pliers is better adapted to bending the clasp at sharp angles, depressing a bulging portion or denting the edge of a clasp.

ATTACHING THE CLASP TO THE PLATE.

In gold work the clasp is either soldered to the plate (See Fig. XIII) or connected to the plate by means of one or two standards (See Fig. IVX-*a*-*b*). For vulcanite work a lug is soldered to the clasp (See Fig. VI and VII) the base plate may then be extended any distance to grip the lug. Fig. VII-*b* shows union of clasp and lug.

LOCATION OF ATTACHMENT UPON CLASP.

The attachment to the clasp should be one-eighth to three-sixteenths of an inch wide, and should be placed as near the middle of the long way of the clasp as the setting of the teeth will permit (Figs. VI and VII). By this arrangement a spring clasp will not be converted into an unwieldy stay clasp. Fig. XIII-*a* shows the right way to form the attachments while Fig. XIII-*b* exhibits a wrong way.

CONCLUSION.

Clasps properly conceived and formed are a blessing to both patient and prosthetist, but improperly used are vexatious to the dentist and a detriment to the victim. The retention of artificial dentures either partial or full is a profound subject for thought, and worthy the best efforts of the operator.

WEAK POINTS IN POST CROWNS AND HOW TO OVERCOME THEM.

BY BURTON LEE THORPE, M.D., D.D.S., SAINT LOUIS, MISSOURI.

Dean and Professor of Operative Dentistry, Dental Department, Barnes University, St. Louis, Mo. U. S. A.

The post of the dowel crown, as described by writers and clinicians, is a straight, round platinum wire about number twelve gauge.

Those who are frequently called upon to remove and reset such crowns should recognize that this small post is the weak point and real cause of failure of the majority of crowns so constructed. Where these crowns are set on roots improperly prepared, with the canals considerably larger in circumferences than the post, as is often done, the force of mastication soon forces the post loose from the cement that anchors it and repeated re-cementing, or a new crown, is the result.

In crowning anterior teeth three important steps in preparation should be observed:

First.—Shaping the root for the reception of the band. All roots should be so parallelled and beveled that when the band is driven to place the farther it goes toward the gum margin, the tighter and snugger it becomes, and when in place it approximates the relation to the root, that a ferrule does on a cane. The band should not "go just to or just under the free margin of the gum" as some teachers advocate but *well under the gum,* at least a thirty-second of an inch. This induces a beneficial change of condition, exciting a healthy circulation.

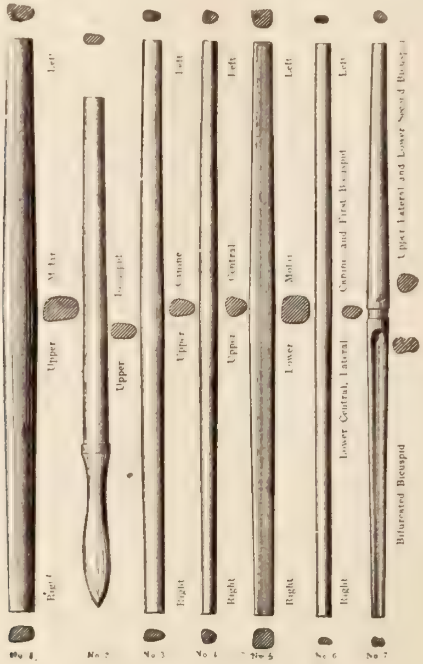


Fig. 1 (Reduced one-half)

Especially is this so in teeth that prior to crowning have been abscessed or affected with pyorrhoeal or pericemental trouble.

Second.—The band should be of 30 gauge U. S. Coin gold (90 parts gold 10 parts copper—21.6 fine), because of its rigidity and non-expanding qualities and should be soldered with a lap joint—not end to end—and should be a trifle smaller than the root so it may be first stretched to accurately fit the root over one of the set of S. S. White mandrels, which are, after once becoming accustomed to them, indispensable to the crown worker. (See Fig. I).

These mandrels accurately and automatically approximate the natural lines of the human teeth and are so graduated that almost any size or shaped tooth may be fitted with ease without prolonged or painful hammering and fitting. By placing the band over the mandrel, the natural form of the root may at once be determined and approximated, as this set contains seven mandrels, representing all the teeth.

Should the band be a trifle too small, place it over the mandrel and with a few taps of a small hammer the band is expanded to closely and easily fit the root.

Third.—The third consideration is the *enlargement and proper shaping of the root canal for the reception of the post and fitting the post.*

The too prevalent and reckless use of engine drills in enlarging canals for posts should be discouraged. Hand drills are the best and safest. The canal, however, may carefully be enlarged with drills made from discarded fissure burs of assorted sizes, ground three-sided to a tapering point and tempered. (See Fig 2).

Safer and more accurate than these engine drills are a set of hand instruments made in assorted sizes from old excavator blanks, tapered to a sharp edge three sided point. These are easily rotated with thumb and fingers, thus avoiding the danger of drilling through the tooth wall as with engine drills. (Illustrated Fig. 2).

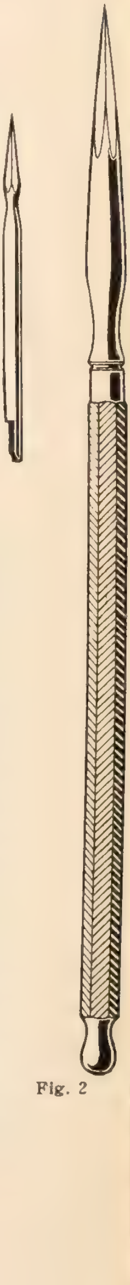


Fig. 2

After the canal has been opened to the proper degree and the length of the canal marked on the hand instrument, the iridio-platinum post should be filed round and tapering to correspond in length and shape and to accurately fit the canal. (See Fig. 3). This should be done by the operator at the chair and not in the laboratory, so that, when the pin is slightly roughened and the crown set to place there is no need of any excess quantity of cement, as an infinitesimally small amount of either cement or gutta-percha is needed to securely retain the crown in position.

With the root is properly shaped and rigid U. S. coin gold band well adapted and extending well under the gum, and post accurately and closely fitting the canal, the usefulness of the dowel post crown is insured. I repeat, the main weak point in post crowns is lack of attention to details especially in shaping the canal and fitting the band and post.

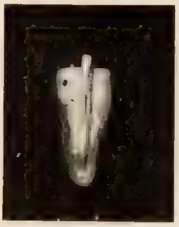


Fig. 3

CROWN AND BRIDGE-WORK.*

BY D. A. HOUSE, INDIANAPOLIS, INDIANA.

Like all other subjects in dentistry the one chosen for this paper has been through the mill of discussion in all its phases pro and con until it seems to me, little can be added which has not been discussed to a degree to scarcely allow repeating. But "lest we forget," it is probably well for some one to occasionally bring before us the various subjects in which we are all interested if for nothing more than to promote a discussion in which each of us may express our views and experience concerning the most vital points.

When we consider that entire text-books are given to this subject and many pages in others are devoted to it, while in some of our periodicals we find it displayed serially, we must conclude that every case with a missing tooth or teeth can in one form or another be treated successfully and satisfactorily. But let me say here that he who believes and follows many of the methods proposed, and which are so clearly described by word and illustrations, will learn some things not mentioned in any text-book or magazine. I believe we should settle on a few good ideas, and with few exceptions vary very little.

---

*Read before the Indiana Dental Society, June, 1905.

I want to speak of the tendency of the profession in general to grab as it were at any new thing that comes along before knowing much of its real merit. Cataphoresis rose and fell; Pressure anaesthesia appeared in the horizon and was for a time a star of the highest magnitude, which seemed to many of us a beacon light. The porcelain inlay today has the greatest brilliancy, and because of its apparent extreme grandeur, many of us can see nothing else. Crown and bridge-work long ago reached its zenith, and so on each particular new idea in its turn, but I am happy to say that each seeks its own level. There was a time in the memory of many of us, when the loss of one or a few teeth meant a bridge, or a cavity of more than ordinary size meant a crown. Today the conscientious dentist will first consider the case in all its phases, ever keeping the good of the patient uppermost in his mind and if an artificial denture is the best for the good of his patient, that is what he uses, and will not grieve over the loss of a fine bill he could have rendered had he inserted a bridge instead.

MISJUDGMENT.

How often do we see cases where one or two or even the four incisors are lost, where they have been replaced by a bridge in a manner that is most inartistic and unsightly and even disgusting, and not in the least satisfactory to the patient?

How often do we find a bridge extending possibly from the cuspid to the third molar, and frequently the only teeth remaining in the mouth being a couple of molars and the two cuspids, and in these cases attempts made to restore the lost teeth by bridging?

Wouldn't it be more professional, rendering a greater service to the patient by replacing the lost teeth by means known as a plate? Wouldn't the patient enjoy about as good service from such a method? Wouldn't it be more hygienic? Wouldn't the few remaining teeth be serviceable for a much longer period?

How often do we find a bridge of long dimensions loosened at one of its attachments probably for some time, and upon removal the supporting tooth crown come off with the bridge because of complete disintegration of the tooth structure? Would not a plate have given almost as good service and for a much longer time without any apparent damage to the remaining tooth?

Allowing for exceptions that must be granted in all lines of our work as dentists, I will suggest a few cases as they appear to me to be most applicable for the use of bridges:

The loss of one or more teeth on one side of the upper maxilla if by the insertion of a bridge the organs of mastication are complete. This may be done very successfully on both sides providing the anterior abutments are in a condition to be replaced by porcelain crowns of some sort without the destruction of a perfect tooth. If a few teeth are missing on either side and the teeth to be used as abutments are sound and perfect, I believe a plate to be the radical substitute for the missing teeth.

In the lower maxilla where a few teeth are missing on one or both sides, I believe the insertion of a bridge to be more satisfactory because of the almost universal unsatisfactory results obtained by inserting a lower plate with but a few teeth. I believe where one or more of the lower anterior teeth are lost they can be replaced in a more successful manner by bridging than by means of a plate. In nearly all cases where one anterior tooth upper or lower is missing even back as far as the second bicuspid, if an adjoining tooth is badly broken down and can be restored by crowning, that a bridge can be used advantageously providing the occlusion is not too hard so as to form too great a leverage.

While these suggestions do not cover all cases by any means nor perhaps do as a rule for instruction to be followed in our colleges, the principal point I wish to make is:

Considering the prophylactic and artistic results as well as the actual service obtained, I am much opposed to mutilating and grinding to destruction good, sound teeth for the insertion of a bridge when the same or perhaps better results can be obtained by means of a plate.

STRENGTH FOR A BRIDGE.

I want to mention a few things about the strength for a bridge. The strongest chain is no stronger than its weakest link. So with a bridge. The weak point so often found in a bridge lies in the abutments themselves. How often do we see a bridge loose at one end and not infrequently do we find a section of a band of a crown where a bridge is soldered, pulled out as it were. When we see these accidents, we are prone to lay the trouble to hard biting, faulty occlusion, poor cement or what not, while I believe in most cases we can truthfully say it was a lack of material in making the band of the crown. The band is too light. The tendency of the force as applied in mastication is to pull the band from the abutment, and as all teeth are more or less movable in themselves, I believe the pulling force from hard occlusion is greater than many of us would even suspect. This force constantly applied if the band is too light will cause a slight stretching or straining of the band allowing ingress of moisture and subsequently a loosening of the crown.

Another weak point in the construction of bridges and especially the hollow all-gold dummy, or where the dummies are made complete before soldering together is at the point of union. Two or more dummies of this kind should be supported by an extra piece of gold on the under surface extending from one abutment to the other.

OCCLUSION.

Next I want to lay some stress on the occlusion; that thing concerning a bridge which should ever be in our mind for the good of the patient.

It should be so made as to allow for the lateral movements of the lower jaw. In many cases where the teeth are not too short and especially in the lower, there are methods of using porcelain teeth in bridges so as to form a porcelain occluding surface which I think is always preferable to a metallic surface. But in cases where the cusps are formed of gold, we are prone to follow the old idea of pretty and shapely formed cusps. To have them appear as moulded. To have the bicuspids formed and located as bicuspids, and the same with molars.

I want to say that the beautiful, smooth, rounded, metallic cusps are not the best form for the grinding they are intended to do. Instead, have little lugs or elevations forming a roughness to the surface, varying in height as to location and occluding teeth, and you have a surface for mastication that to the patient will be a joy if not a thing of beauty.

Equally important as are the foregoing considerations, is construction with a view to cleanliness. Nothing that I can think of that is associated with the mouth so far as dentistry is concerned is so nasty, so repulsively dirty as a poorly made and poorly adjusted piece of bridge-work. Did you ever remove one? Did you ever have an occasion to repair one? Did you ever notice one in the mouth of a patient who perhaps biweekly or monthly takes the time to use a tooth brush? I can best give for example an all gold bridge, preferably a lower. One in which the dummies were made individually and complete. Attached to each other and the crowns having the approximating surface only partially soldered, leaving deep and narrow crevices. The under surface very close and often resting on the gum or as we frequently see them, concave and resting closely to the gum. And very often on examination you will find openings to the inside for ingress of saliva, food, etc. Take a case of this kind and it is enough to bring the blush of shame to the dental profession as a whole.

Suppose a carpenter, plumber or any tradesman to do work in his line of a character similar to this. Suppose it were common in his trade. What would be the opinion of his patrons? Hence we should avoid deep notches or crevices. Have the points flush well soldered and smooth. Have plenty space between the bridge and gums in posterior bridges. Have the under surface convex rather than concave. In anterior bridges with porcelain facings conditions are different. Being easy of access and the teeth thinner, with the cervical ends ground to adapt nicely to the gums, and with smooth polished edges, they may rest quite firmly against the gums with no ill results.

We must admit that for aesthetic, artistic and prophylactic reasons a bridge constructed of porcelain is far superior of one upon a gold basis, but because of its friable nature is rather dangerous to use in cases of great strain and particularly where the space limits the thickness of the bridge. Because the porcelain bridge is not used generally, I will not consume any time upon its merits or disadvantages.

Much could be said about selection of teeth as to color and form. Methods of backing facings, tipping the incisal or occluding end for their protection, soldering, repairing the various kinds of work and the many ways of constructing bridges for the different cases we meet, but as every one has his own particular way of accomplishing certain ends, I have said enough along this line.

PREPARING A MOLAR OR BICUSPID FOR A BRIDGE.

As to methods for construction or insertion for this class of work I have nothing new to offer. There is however, one way of preparing a molar or bicuspid for supporting a bridge, while not generally observed yet it appears to me as one of merit. Take for instance the long so-called bell shaped bicuspid or molar either upper or lower, possibly a recession of the gums makes it a very long tooth and who has not serious trouble and hard work to make himself satisfied with the way in which he can shape such a tooth for a crown? Suppose too that one or both teeth incline slightly as we nearly always find them, and who can grind them, make crowns to fit at the Cervix and make a bridge that will go on. Some of you will say it's easy. It is not easy. You all know how difficult it is to fit a crown properly, when you have all the advantages. Some will say devitalize, then you can grind the tooth with impunity. Very well you devitalize, but I and a great many others will not. The remedy I suggest in these cases is this: Grind the crown of the tooth conical shape to a point a little below the greatest diameter of the crown. Make a band to fit accurately to the point the tooth is ground. This band can be made of say 30-gauge 22-k gold or 28-gauge 24-k gold, and should be fitted on the tooth and removed in a plaster impression. With it on a model you solder another band of gold 28 to 26 gauge around it allowing it to not quite reach the cervical end of the first band. Replace one tooth, remove in another impression and add cusps, as per your own method. When the bridge is completed it will go on, the teeth having been ground to a minimum your crowns will fit and if necessary the cervical edge of band which has been dressed to a thin edge can be burnished to the tooth. Some will say the edge of the band not being under the gum is unsanitary and will invite decay. Just the reverse. It is more sanitary and easier of access, consequently easier to keep clean. We have all seen cases where attempts were made to fit and extend bands of crowns under the gums, and while miserable failures as to fitting, they generally do not cause decay. We frequently see cases where perhaps the band did extend under the gum margin but by recession the edge is exposed and seldom fits the cervix, yet the tooth in a perfect state of preservation.

BACKING THE FACING.

I feel that enough has been said along this line with the exception of a few words about backing porcelain facing, which while not new, perhaps to all, I am sure is not in general use. The majority of dentists I am certain always feel anxious when soldering any case in which porcelain facings are involved. They let go a sigh of relief when they remove the work from the investing material, and can see no fracture of the porcelain. It may be fractured and you not able to detect it. We often find after the work is adjusted in the mouth a facing that has been pushed off so to speak, possibly leaving a small or thin layer of porcelain next to the backing. In all probability that fracture was there before putting it in the mouth. I believe by far the greater majority of facings are fractured by a small amount of solder flowing on the back next to the facing. This happens while the whole mass is very hot and at its greatest expansion, then when it cools and contracts something must give and it is usually the porcelain. The prevention of solder flowing between the backing and facing is the point I wish to explain. After the backing is closely adapted to the facing, whether of ordinary plate, pure gold or platinum, by swaging or burnishing, remove the backing and coat the surface next the facing with a thin solution of French whiting, let it dry and replace on facing. Solder will not flow where there is a trace of whiting.

Facings that are of light color and transparent, their color is less changed by a backing of platinum than gold. I find a good way to do is to fit a backing of gold and place under it a backing of platinum inlay foil, or a strip of foil extending from the incisal edge to the pins, always bearing in mind to apply a coating of French whiting on all surfaces that come in contact with the porcelain.

THE GOLD CROWN.

We as dentists are always clamoring for art. Things along artistic lines. We hunt out the fine lines in nature, make deductions, establish certain symmetrical rules with scarcely an iota in variation in order to obtain certain results. But how often we hide our conscience under a bushel when it comes to a display of gold in the restoration of a tooth by means of a crown. Since the gold crown has its merits we must of necessity use it. The methods and different details in their construction are without number. The seamless and soldered; the hydraulic swaged and other forces; the swaged cusp reinforced with solder and the cusp built up of gold and solder, each accompanied with its claims for superiority.

We even see them made of a plain ferrule for a band with a flat piece of gold for a cusp, and the patient wears it with a feeling that it is a masterpiece. It matters little how they are made so we get the results as to adaptation, comfort and service. My preference is by fitting the band to the tooth in the mouth, getting it on a model and building up the occlusion with pieces of gold and solder. The band need not be as heavy as for a bridge as the force is not so great, and is applied directly or nearly so with the axis of the tooth. I believe 29 gauge gold is heavy enough in nearly all cases.

There is one feature in the adjustment of a crown that in my estimation holds the right of way over all other points, even the occlusion not excepted, and that is the preservation of the interproximal space. Just as essential in the crowning as in the filling of teeth. For the same reasons that we need a point of contact in a gold or amalgam filling, or in the natural teeth do we need it in a gold crown or any other crown.

Another point which I wish to lay stress upon concerns the support for an individual crown or where a crown is to support a bridge, and that is in cases where the natural tooth crown is gone. Rather than have a large bulk of cement fill the crown with very little of the remaining tooth or root, a partial restoration should be made of amalgam. The possibilities of a failure are much decreased if the greater part of the crown is filled with material other than cement.

It of course is the opinion of nearly all of us that the uses of gold crown farther forward than the first molar or 2nd bicuspid are rare indeed, and often in these cases we can with good results bring into use the porcelain facing.

PORCELAIN CROWNS.

Of porcelain crowns we have many to choose from. They are made in many forms for our convenience and generally speaking they are all good, and if perchance we are not able to meet the demands in the case with a crown as they are made for us, we can either change them or make an entire crown with the means at our command in the form of the many porcelains now on the market. I am an advocater of the porcelain crown. Nothing is so neat and artistic and in most instances they are quite as durable and serviceable as any other form of crown.

The porcelain crowns as they are made for us are to say the least quite a convenience. They are easy of adaptation; in fact too easy. They are so simple to adjust and fasten to the root of a tooth that it will if we are in a hurry invite carelessness. To grind and properly adjust the cervical end of a porcelain crown to the end of a root requires both time and skill.

In many cases the porcelain crown supported by its dowel is all that is necessary, but in many instances it is not, so that calls into use the band. I am a believer in the use of a banded crown (providing the band fits the root, and if not, leave it off, with a capital OFF.) It not only adds strength to the case but prevents the liability of splitting the root.

I find it, I may say, quite necessary at times to resort to making a porcelain crown in order to meet the demands of the case at hand. Make the cap for the end of the root and solder the dowel in a similar way as for making a Richmond crown, leaving when possible the end of the dowel protrude through the floor of the cap and solder the pins of the facing to it. Then restoring the lingual part of the crown by porcelain. We also gain the advantage by making the porcelain crown ourselves, of having a greater variety of shades, shapes and sizes of facings to choose from, than we do in ready made crowns.

I also find a decided advantage in the use of oil colors in modifying the shades in porcelain crowns and facings.

As I said in the first part of this paper, "There are ways without number in the methods of constructing crowns and bridge-work. Every dentist has his own peculiar method. All of course, are not experts and some cannot do work as neatly as others, but what we want especially is results."

So, treating this subject generally, I do not feel that I should take the time of this meeting, and go into detail of any particular part of it, as I feel that there are many important points come under this subject, and limit of time will not allow the taking up of each in all its details.

DISCUSSION.

Doctor F. R. Henshaw, Middletown, Ind.:—It could hardly be expected that I would be very critical in view of the fact that Doctor House is the only teacher on crown and bridge-work that I have ever had, and all that I have ever got into my system I got through him. I knew very nearly before I received a copy of this paper what the key-note of it would be, because I knew Doctor House and his methods and his ideas of practice, and it seems to me that the principal thing in his paper was conservatism. I know him to be a conservative man, because he tried to teach all of us boys at college to see things from that view point and crammed it into us for three long years; and if there is any particular point in dentistry where conservatism should be employed it is certainly in the matter of crown and bridge-work. There has been no field, not one, that has offered greater chance for graft than this same matter of crown and bridge-work. They, the grafters employ it in order to attract people to their offices. One of their particular grafts is to advertise teeth without a plate. I saw one of these yesterday afternoon. As I came down I stopped in the office of Doctor Orland, in Anderson, and while I was talking with him a lady came in with the four molars, the second and third molars, superior, badly diseased. She was in great pain, and in the course of the conversation with her, Doctor Orland asked her what she had been wearing. She told him that she had a bridge. He said, ''I do not quite understand what you mean.'' She said ''I have a bridge that I have been wearing for five or six years." Of course he asked if he might see it and she brought out a plate that was attached to the second molar on each side with a gold clasp; that was her bridge. These clasps had destroyed the usefulness of the four teeth in the course of these few years. She had worn it, and had been deluded into the idea that she had a bridge and had paid her good, honest money for a bridge, when she really only got a small clasp denture. This graft that has been exercised in the matter of clasps and bridge-work, or as we should say, crown and bridge-work, is certainly a very extensive one. I believe in conservatism in crown and bridge-work, and I think even the best of us are tempted to do things in some of these cases where other operations would be indicated.

In the matter of the form of a bridge that Doctor House spoke to us about, and the use of the porcelain masticating surface, is one that appealed to me, and has appealed to me for several years, and for several years I have made practically all of my bridges with the masticating surface of porcelain. Of course a good many methods may be employed and there is nothing original in my method. I simply construct the bridge, or rather the dummy teeth, as I have shown in clinics on two or three occasions before this society. The box contains the procelain teeth which I wish to employ. I prepared a single dummy which I expect to show in the clinic this week, but in the S. S. White exhibit I found this identical thing made in the form of a bridge, and I want to tell you that it is well worth while to see these things. The rubber tooth in connection with bridge-work has been exceedingly satisfactory. I would advise everyone here to see that little exhibit of bridge-work in the S. S. White exhibit.

There is one thing that Doctor House hinted at that certainly must apply to all of us and that is the fact that we expect and demand a great deal more of the carpenter and plumber or blacksmith who does work for us than the people generally demand of their dentist. We require better workmanship and get it, and it seems to me that this is a serious thing to be said about the dental profession, but it is true to a very large extent. A great deal of the work would not pass under a first-class joiner's hands.

I know of no particular points further that I wish to touch on in the matter of Doctor House's paper. I consider that it is a very thorough paper, and enjoyed it very much.

DOCTOR J. D. PATTERSON, Kansas City, Mo.:—I have something to say and I am glad to say it, Mr. President. I am glad to be here with you and be able to say a word. I am not as yet disfigured; possibly I haven't been here long enough. I was glad to hear the paper read; I am glad to hear any paper read before a dental association. A man who has the courage of his beliefs and brings them before a body of this kind should be complimented, and if I disagree in some respects with the methods which he has advocated, and perhaps with some of those who have discussed the paper, that may be my error, it may be my "personal equation."

I do not agree with the essayist in the statement in respect to bridges, that they are sometimes made and usually made when partial plates should be used, and I appreciate perfectly the fact that in the making of partial plates there is a great deal of difference in who the workman is that is making the plate. Possibly one man can make a partial plate and do the work satisfactorily when others will have to resort to bridge-work, but it is a fact in my experience that the best partial plate is worse that the poorest bridge-work, (Applause) because it destroys the teeth that remain, destroys the gum attachment and in a very short time they are lost. I think I know what I am talking about because I have observed these things very carefully and even with poor bridge-work the result is better. I have worn partial plates myself and I can speak from experience, and I have also watched it very closely in my practice. The disease that we call pyorrhoea alveolaris or Rigg's disease, I have a great deal to do with, and I never yet have seen a mouth where partial plates were used but what this disease had its origin from the use of partial plates which would destroy the remaining teeth to an almost universal extent. This is my experience in the matter.

When teeth are for the support of bridges and crowns, they should be devitalized and when the essayist advises as he did in his paper, against the devitalization of teeth used for the support of the bridges, I think he has much to learn. In our part of the country we do not under any circumstances work as he advises and I think he makes a mistake. It is absolutely a rule with us now that when we come to make a support for bridges the teeth are devitalized.

I want to speak particularly about one thing in that paper, because it is a thing which I have thought about and talked about a great deal, and that is this. He speaks of the proper interdental space and the necessity of maintaining a normal anatomical, physiological space which we find is a perfectly arranged, normal dental arch, and yet, he advised the very thing which absolutely precludes the leaving of this space. Of course we must use bands sometimes, but in speaking of the making of crowns he invariably advocated the use of bands, and when you make a band on a crown you have not restored the interproximal space to its normal conditions. We get rid of that by making crowns without bands, and this is my usual practice. Then we can have an interproximal space that is absolutely restored, an interproximal space that can be perfectly cleaned. With bands there is a space which is a gatherer of calcic and other matter not only in the interproximal space, but around the entire tooth, and why use it when you do not have to? There is no question but that you have the proper strength without bands. In building crowns you can use facings and build crowns from the bottom of porcelain, and then you have a crown which makes an interproximal space which is self cleaning, and when it comes to pyorrhoea alveolaris you can clean that root. I have often been working upon teeth on account of uncleanliness and cursing the man who put the band there to invite pyorrhoea alveolaris and make it impossible to clean it from the deposits when they were there. Without the band there is no difficulty of that kind.

There were other things which I wished to speak about but this one of placing crowns in any part of the mouth without bands is one I am deeply in earnest about. I place no bands except where the root is split, or in remote cases. There are exceptions to rules. The man who has to deal with anatomy and physiology of our bodies has to vary his rules and methods to every case that comes into his hands, but I mean very nearly what I say, when I say I do not use a band.

I think that bands can be made all right if the enamel is properly removed. I think personally there is no question about it.

Doctor Redman:—I should like to ask one question. I should like to know why these gentlemen object to crowning live teeth?

Doctor Patterson:—Because of the results, for they are serious. The pulp usually dies, and you have to take the crown off to remove the pulp. This is the only reason on earth to save your patient pain and yourself humiliation. I do not prefer to devitalize, I only do so when it is necessary. I like to make a straight road through the forest for the best usefulness and if I crown a tooth for a single crown or support for a bridge, I would devitalize for future comfort.

Doctor Morrison, Connersville, Ind.:—I am glad to hear a man whose skill stands as does that of Doctor House say these things that he has said. Perhaps he has not said anything that is of more importance or touched upon a more important subject than that of the advisability of bridge-work. The fact is that bridge-work has educated the people to be content with—I don't know what word to use—very poor looking things in the mouth, that are uncleanly and mechanical appearing, oftimes repulsive. If you remove a bridge from the mouth of a woman of refinement and show it to her I do not know whether she would allow it to be returned or not. A gentleman came into the office the other day to see about some work and on examination I found that he had lost all of his upper teeth save the cuspids and first bicuspids, and had lost the first and second molars from both sides below. Now some one has placed a gold cap crown over each of the upper cuspids and swung in the incisors upon a bridge, he had then gone to another dentist and he had placed a bridge on either side below from the first bicuspid to the second molar. He has passed through the hands of two men, and one of them I know to be a graduate of dentistry and his mechanical part of the work is very good and very well done. The bridge was nicely made so far as soldering was concerned, and fitted very well. It was all very nice, but that man had the notion that prevails among a large number of people that anything is better than a plate, and had passed through the hands of two dentists, and had not learned that he most needed a masticating surface. He had paid these men from twenty-five to fifty dollars and had nothing. He did not learn what he should have learned if he had fallen into the hands of a thoughtful practitioner of dentistry. What he had in his mouth did not improve his appearance and did not materially increase the masticating surface. This is possibly an extravagant case that I am citing. I do not care about this man losing his money for he ought to know better. But he had twice to find out what he should have in his mouth and he had yet a false impression of what dentistry ought to do for him. This is what I take to be the error of bridge-work. How much better would it have been had the first dentist placed partial plates in either jaw thus restoring the entire dental arch.

Doctor House said something about simplified methods. I think he spoke the truth. Perhaps the dental profession is getting too much method and machinery and things that are not much to our credit. There are piles of stuff and multiplied ways of doing things. Most anyone can make a machine to hull peanuts if he is at liberty to use all the machinery and levers he likes, but the right results should be obtained by simpler methods, and these simplified methods should be the aim and object of every workman and especially of the dentist.

I think Doctor House referred to the place in the mouth where bridgework reaches its highest excellence and usefulness, and that is in restoring the loss of the lower first and second molars. A great many people have lost their first lower molars not knowing they were permanent teeth. This not only injures the masticating value of the arch but in a little time the upper teeth begin to protrude, and in cases of this kind I try to persuade the patient to have a bridge in these places to restore the teeth, and for its effect on the upper teeth.

Referring to hollow dummies, I would not suppose that he used many of these. I used to use them but I have abandoned it all together. I do not see any place for them in the mouth; surely not for the upper teeth. We can just as easily and quickly make these with porcelain faces and for the lower with porcelain on occluding surface.

There might be a difference of opinion about making bands about the roots. I never saw a case of this kind that I did not attribute the whole thing to improper occlusion. I keep in mind this notion. If the lower teeth can touch the lingual surface of the upper incisors, no matter what the crown is built of, it will be driven out of position except in very favorable cases.

Doctor House has spoken of cleanliness. I am glad he mentioned it.

I am glad he mentioned the half cap for the lower molars. I have done that in times past and I have often wondered if I were doing the right thing. I get a very good fit and preserve a healthy condition about the gum.

I think that all of the things he has mentioned are important. I will not detain you for anything further.

Doctor Byram:—I am glad the doctor has come here to learn something. I believe these doctors are right in a measure. I quite agree with Doctor Patterson on the band proposition. Partial bands are many times made but I have yet to be convinced that they are the best forms to make, or that he would make all crowns more satisfactory without bands. Probably Doctors Patterson and Root have such a high class cliental that they can make a crown or bridge of porcelain which is the ideal way, but they do not live in Indianapolis, you know. Out in Kansas where they can get $100.00 a tooth for bridge-work, of course they can do these things, but in Indiana where we get only $25.00 a tooth we must use a few shell crowns and occasionally a band in a platino-porcelain crown.

I believe that the trouble around the root is not altogether from ill-fitting ferrules, but that will cause a disturbance, so I take exception and say that if the ferrule accurately fits the root you will have no future complications. It is a fact that in pyorrhoea many of the teeth are banded in order to be able to retain them, and many are crowned by the use of ferrules, and if these properly fit they do not cause future trouble.

Now with reference to partial plates. As I understood Doctor House's paper, it was not his intention to advocate partial plates rather than bridge-work, but so often we see cases where all the teeth on one side are lost from the bicuspids backward, and as I understand it, in these cases he is advocating partial plates rather than ordinary fixed bridge-work, and I believe it is better to use properly fitting partial plates in these cases rather than to use fixed bridge-work. The more I study fixed bridge-work the more I am inclined to condemn it in extensive cases, and I have yet to see the first patient with a fixed bridge that has been worn for five or six years that you cannot detect that disagreeable bridge odor. I don't believe that Doctors Patterson or Root, or any one else can make a large fixed bridge that can be kept as clean as it is desirable to have work in the mouth. I do not care how they make it. I am an advocate of removable bridges in large cases, and if not removable then use a partial plate. I still see good in partial plates.

Doctor Root:—I simply want to correct the mistake Doctor Bryam made in regard to Doctor Patterson and myself receiving $100 for a crowning. I do. Doctor Patterson don't. There are times when we must make shell crowns, and when we do we are compelled to use a band; otherwise if not we do not use it. I do not want you to misunderstand me; of course I speak very clearly, but you might misunderstand Doctor Patterson.

Doctor James:—I only wish to say a few words. I am an advocate of porcelain bridges in a great many cases. I also believe that in banding roots of teeth, and I think the failure is in the banding more *than in the bands* themselves. I think that bands can be made all right if the enamel is properly removed. I think personally there is no question about it.

Doctor Redman:—I should like to ask one question. I should like to know why these gentlemen object to crowning live roots.

Doctor Patterson:—Because of the results for they are serious. The pulp dies, and you have to take the crown off to destroy the pulp. This is the only reason on earth we speak as we do. If I have proper time and the pulp is devitalized, and I have the proper time to make it fit, etc., it may not give any trouble. I do not like to devitalize unless it is necessary. I like to make a straight road through the forest for the best usefulness and if I crown a tooth for a single crown or support and make a proper fitting abutment I would not devitalize. I have never seen any man that could do it; I cannot, and that is the only reason that I speak as I do.

Doctor J. P. Root, Kansas City, Mo.:—I came to this meeting to listen to the papers and their discussion, not to discuss them, except in one instance, and then I desire to tell your friend and my friend, Geo. E. Hunt, what he does not know about children's teeth, as I understand he is to read a paper on this subject.

In the paper to which we have just listened, there are one or two statements to which I take exception, especially the use of partial plates, their use in preference to bridges, with me such plates have gone out of existence, except with some of my poor patients, and I would call it poor practice to insert a plate in preference to a bridge, not alone for the filthy condition generally existing, but also for the irreparable damage resulting to remaining teeth.

I also desire to take exception to the advice, not to devitalize for shell crowns, it is only in rare cases when I leave a live pulp, such as in old age, when from abrasion the pulp has receded, or an abnormal shape of tooth, results in little or no grinding to be required. The essayist did not mention the best crown extant, namely The Logan, which I consider superior to all other porcelain crowns. It was not my intention to say anything, while here, as I am very much humiliated and embarrassed owing to my disfigurement, the only explanation needed is, I was automobiling with Doctor George Hunt last night, and you know what that means.

Doctor House:—I spent sleepless nights and wakeless days in writing this paper, and I have accomplished just what I wanted to accomplish, and that was a discussion, and this discussion has been very interesting to me.

There are a few things on which I think I was misunderstood. Starting at the beginning. Doctor Morrison made the remark about the gold dummy and I think he misunderstood me. The remark was about making of a gold dummy in upper bridges. I do not wish to be understood as advocating anything of that kind as I certainly do not think that way. Porcelain with very few exceptions, can be used, but I do make lots of gold dummies for lower bridges, and I think they are about as good as anything when I get through. I cannot see any objection to them. ,

Our friend from Kansas, Doctor Root, in speaking of the partial plate said that in his estimation there was no use for a partial plate, and probably intimated that he had never seen a case where a partial plate was indicated. Of course we will have to make our own deduction about this. He has his ideas and I have mine, and I suppose you have yours. I want to say that in my own mind there are many places where a partial plate is the radical thing to use. You may talk about devitalizing a tooth in order to put on a crown for a bridge, but when the young lady or the boy, or no matter what age, so far as that is concerned, comes along with a central or lateral that has been lost from some cause or other, I cannot have the nerve to rob the approximating tooth of its nerve and put on a bridge. I cannot help but believe in partial plates. If you do not want rubber plates use gold plates. He has tried to make believe that all plates are disastrous and injurious, but I cannot see it that way. And to my mind there are many cases where I think the small partial plate is most preferable to the bridge, when you take into consideration the things you have to do and the results. As I said before, I haven't the nerve to rob a tooth of its nerve in order to accomplish some of these things, consequently I feel that a small partial plate is the best thing to use.

Another thing we must remember, at least we should know, and that is that we cannot all do the fine work that some of these men from Kansas can. In any case that presents itself they can accomplish certain ends, not failing on the smallest infinitesimal point. We can not all do that. Consequently, I will say that ninety per cent. of the dentists will have to do the next best thing. How many in this room would undertake devitalizing when it is not necessary? How many would undertake to devitalize to put on a crown on every tooth in the mouth back of the third molar? I would not undertake it, some of you may, I could not and would not. That is my position. I will acknowledge it is probably the best thing to do but the majority of you do not do it if you would only acknowledge it. I have worked around the teeth in the mouth long enough to know some of these things are mighty near impossible to do. You can take a tooth out of the mouth and grind it and work with it in any way you like, but I want to tell you that when you do some of these things in the mouth it is an entirely different proposition.

Speaking about the use of bands on crowns. In writing my paper I said I was a firm believer in banded crowns, but I said provided that band fits, but if it does not fit leave it off with a capital OFF, and I still stick to that. I think it is possible to put a band on a crown. I have seen a great many bands on crowns with very little or no injurious effect.

The porcelain bridge was discussed. I did not spend much time in discussing that for the reason that while the porcelain bridge is the finest kind of work that can be put in the mouth in the form of a bridge, but as but few of the dentists are equipped for and are doing this kind of work, consequently I did not feel like consuming a great deal of time in writing about porcelain bridges. The few I have made are very satisfactory, and I cannot say a word against them. But they are not in general use. I will venture to say that there not fifteen dentists in this room that have ever made a porcelain bridge and for this reason I did not like taking up your time talking about them.

I feel that the things which I wished accomplished have been accomplished. The discussion has been very satisfactory to me, and I am fully repaid.

CONSTRUCTIVE DISEASES OF DENTAL PULP.*

BY CHARLES KNIESE, CAMBRIDGE CITY, INDIANA.

Of all the tissues of the teeth, the pulp is most subject to pathological changes. Normally this delicate and sensitive organ is well guarded by rigid walls, which not only protect it against external forces, but also against extreme thermal changes to which the oral cavity is exposed.

We must bear in mind that the pulp is very vascular and sensitive, that the vessels and nerves are supported by a soft cellular substance of connective tissue, and that the whole organ is contained in an unyielding cavity, whose only entrance and exit is a small foramen, whose caliber may not be larger than a bristle.

Through this opening the blood enters and in due time is returned. The whole forming a very delicate piece of machinery capable of performing its duties when in natural adjustment.

Any agency that interferes with the protection with which nature has clothed the pulp, is calculated to set up morbid changes in its structure and interfere with its functions thereby producing either acute or chronic conditions.

The acute diseases are usually destructive while structural and constructive changes are more characteristic in the chronic.

Constructive diseases are those accompanied by the formation of deposits of calcific material which is subject to formation upon irritation of the peripheral cell of the pulp.

This irritation is usually due to the loss of enamel by caries, mechanical abrasion, or any source which deprives the dentine of its natural protective covering.

---

*Read before the Indiana State Dental Society, June, 1905.

The vital portions being thus exposed, it is evident that the morbid conditions developed by the cells, exposure, are expressions of pulp disturbance and we can expect to find a reaction on the part of the pulp. This depends, however, on the severity of the irritation, the duration, and number of times sources of irritation have been in operation.

The pulp therefore, endeavors to protect itself against the irritation and as result we have the following formations:—tubular calcification, secondary dentine, pulp nodules, and calcarious degeneration.

By tubular calcification is meant the constructive changes in the walls of the tubules of the dentine which efface the dental tubuli, caused by a mild degree of irritation that has not passed the stage inducing constructive metamorphosis.

The fibrillae become smaller in diameter as the lumen of the tubules decrease and the dentine frequently becomes less sensitive

This disease is confined to the dentine which after the altered condition becomes translucent, resembling a horn in appearance and in senility may become quite transparent.

In the cases due to age it is probably a local expression of a sclerotic change. The intercellular substance is formed at the expense of the cellular fibrillae.

It may be regarded as a bearier erected against the progress of caries, erosion, abrasion, etc., thereby delaying the disintegration but it does not prevent it.

Turning now to the secondary dentine we find it to be a deposit of dentine upon the wall of the pulp chamber, deposited after the pulp has had a period of rest from dentine construction.

This secondary formation is due to a stimulation of the pulp to increased functional activity and may be caused by any constant irritation of the dentinal fibrillae, such as caries, abraded or eroded surfaces, metallic fillings that are conductors of thermal changes, gold crowns upon the ground down crowns of vital teeth, etc.

We usually note the formation opposite an area of injury. It is distinguished from normal dentine by its translucency and sometimes its color which may be a light brown.

The deposit may be either regular or irregular in distribution and in some cases it assumes a tumor like formation.

Tomes describes a case of absolute exposure of pulp by fracture during extraction in which a plastic exudation was formed which later calcified. Then an irregular lamina was formed and lastly dentine cantaining tubules, thus covering the pulp completely.

That portion next to the true or primary dentine contains an almost normal number of tubules but their direction is sharply changed and as the formation becomes thicker the tubules are fewer and that portion next to the pulp has no definite form.

In abrasion the deposit is much more regular than in caries, probably caused by the irritation to the fibrillae to be much more regular, and the entire crown may be worn away without pulp exposure.

In some cases the deposit extends well into the canals and totally effaces them for much of their length. There seems to be a difference of opinion as to the formation, whether by the pulp cells or the odontoblasts.

Smith regards it as formed by pulp cells rather than by·the adontoblasts, the pulp depositing calcoglobulin against the dentine; others contend that the calcoglobulin is deposited about pre-existing fibrillae, which continued to persist in the new formation.

The building up of large masses often results in neuralgia or death of the pulp.

No treatment is required where the deposit has been regularly laid down, but in cases where pulp disease is evident, or inferred from symptoms, the pulp should be removed.

This may be found to be a tedious operation and may necessitate the removal of much dentine especially at the portion nearest the pulp chamber.

This condition may be more or less complicated by the presence of pulp nodules, which are groups of calcific material, resulting from secretion and situated within the substance of the pulp. These nodular calcifications are very frequently found in teeth whose pulps have been directly irritated by caries, abrasion, erosion, etc.; however, they may and do form in other teeth of the same denture which have not been directly subjected to the irritation.

It has been noted that irritation of the pulp of one tooth frequently causes a general hyperaesthesia of the pulps of all, this is most notable in people of a neuralgic tendency.

The nodules occur more frequently in masses than singly, and the larger ones may be formed by the coalescence of the smaller. They are more often present in middle aged people than children although they have been found as early as the fifteenth year.

The nodules are very irregular in formation and range from very minute bodies to a size sufficient to almost fill the entire pulp cavity.

A section exhibits the presence of a number of concentrically laminated bodies recognized as hardened calcospherites.

Some present a laminated structureless material, the lamina being arranged around a central nucleus, thought to be calcified dead cells.

The pulp cells under irritation secrete calcoglobulin, which is developed in part into spherites, and the rest remaining without definite histological characteristics, after which the masses are calcified.

The formation has a tendency to increase in size whether the masses are formed by cell secretion or otherwise.

They occur more frequently in the coronal portions of the pulp, but sometimes are found deeper in the root and in this position they may be embedded in secondary dentine.

If they obstruct the lumen of the canal they may cause great pain due to interference with the nerve tissue and circulation.

The presence of multiple nodules do not always give rise to pain, as we find teeth that have been extracted to possess them and there being no history of pain connected with the case.

On the contrary we may have severe pain (usually reflex) upon the part of the pulp without any great depth of a caries cavity, which upon examination would be found to possess pulp nodules.

Apparently sound teeth contain them and the pulps of such teeth may become extremely hyperaesthetic under what are commonly mild sources of irritation.

This is manifested first through the contents of the dental tubule, the dentine becoming very sensitive and any cold substance directed against the tooth may produce paroxysmal and severely painful response from the pulp.

When there is no direct irritation there may not be any direct dental symptom, but a persistent neuralgia may be located at some distant point as pain in the ear, which may be recurrent or persistent and a pulp nodule may be suspected in the absence of a more probable explanation of the pain.

In large deposits the dentine may be almost devoid of sensation, and application of heat or cold even in large cavities may not be followed by any pulp response, however, we commonly have a history of vague dental pains or reflex neuralgia extending over a period of perhaps years.

The diagnosis of some cases by symptoms is only inferential and confirmation lacking until after exploration and the finding of pulp stones in the substance of the pulp.

Pulps, inferred or known to contain nodules, should be removed. This may be accomplished by devitalization with arsenic. However in some cases it causes great pain which may continue for quite a period, as the medicine is taken up very slowly by the nerve.

Pressure anaesthesia may be employed. This though, as with arsenic is very slow in action.

If the nodule be large and difficult to remove apply a solution of sulphuric acid. This will destroy the organic matter of the pulp and the nodule may be easily removed. The nerve should be removed and root canals filled or treated as in ordinary cases.

We have still another form of calcification known as calcific-degeneration, which is an infiltration of the inorganic matter into the tissue undergoing degeneration.

The prevailing belief is that the deposit of salts is a mere precipitation, and that the calcification results from a combination of salts with an albuminous base and fatty acids.

Ordinarily carbonate and phosphate of calcium are the infiltrating salts, but in gout uric acid salts are deposited, due to an excess of uric acid in the form of urates in the body of fluids.

The conditions necessary for calcific degeneration are those occurring in a semi-stagnant blood current.

Carbon dioxide being in excess an acid reaction occurs and the albuminous matter is subject to degenerative changes owing to the faulty nutritive supply and waste removal.

It is the supposition that some cells die and the tissue becomes infiltrated by the cells having an affinity for the inorganic salts which are taken up from the lymph.

Pulp exhaustion, due to secondary dentine formation, pulp nodules and continued hyperaemia or chronic inflammation in which venous hyperaemia plays a part are causes producing a sufficient degeneration of the pulp tissue to produce calcific degeneration.

An evidence of which is the easy removal of the pulp, even to the most minute apical portion, due to the absence of the usual odontoblastic attachments to the dentine.

After extraction the pulp has a gritty feel to the fingers and when dry is quite stiff.

Degenerations present symptoms of reflex pain often referred to other parts.

Response to hot applications is usually greater than to cold ones, but both are delayed.

The X-ray will provide a positive diagnosis. In its absence the diagnosis, apart from the inference from symptoms is a post mortem one.

In cases where there is delayed response to intense thermal tests applied to a clean pulpal wall and from symptoms warranting interference, we should remove the pulp.

This will when removed be found to contain one or more, perhaps many, large granular masses. The canals may be filled as in ordinary cases.

Having reviewed all the constructive diseases of the pulp, we find an evidence of an attempt on the part of the pulp to protect itself, but in all the cases except tubular calcification and a very regular deposited secondary dentine the effects react upon the pulp itself causing its destruction. The extent therefore to which constructive formations are beneficial is an open question.

◆

SOMNOFORM.*

BY C. C. MILLER, D. D. S., PLAINFIELD, INDIANA.

In presenting somnoform, today, it shall be my purpose, if possible, to place it before you in such a way as to be of practical benefit to some one present.

If any of you are strangers to somnoform, it is for you that this paper is especially intended; and it is my hope that a spark of interest may be kindled in the mind of some one here who, like myself, feels the need of a general anesthetic which will induce a sleep of sufficient duration for the extraction of one, two or a dozen teeth.

I do not believe it adapted to those cases where a general anesthetic is used for cavity preparation, the extraction of vital pulps and numerous other extensive dental operations which require considerable time; and, while I have administered somnoform for operations of five to eight minutes duration, the use to which I usually put a general anesthetic is extracting teeth.

Somnoform is a very volatile liquid, consisting of:

Ethyl Chlorid	60%
Methyl Chlorid	35%
Ethyl Bromid	5%

For the discovery of the anesthetic properties of this mixture, we are indebted to Dr. G. Rolland of the Bordeaux Dental School, Bordeaux, France.

Somnoform was practically unknown to the dentists of the United States until it was introduced at the Fourth International Dental Congress at St. Louis, 1904. Since then, it has found many friends among the dentists of America.

In setting forth the merits and virtues of somnoform, I cannot say more for its praise than that my own experience bears out remarkably well the claims made by Doctor Rolland and others who have used it more than I.

Doctor Rolland's claims for somnoform are based theoretically on three statements of physiological facts regarding anesthetics:

First:—That an ideal anesthetic can only be had with a gas which in its condition of entry into, of sojourn in, and of exit from the organism, represents the same conditions of entry, of sojourn and of exit as oxygen.

---

*Read before the Indiana State Dental Society, June, 1905.

Second:—That it is necessary for the production of the anesthesia, that the tension of the gas be superior to that of oxygen so that it might take the place of the latter, in a certain proportion, in the alveoli.

Third:—That as the degree of volatility of a gas determines its pressure, the more volatile a gas, the more easily it can be absorbed and eliminated, and consequently, the more easily it can be made to take the place of oxygen.

An ideal anesthetic, capable of being absorbed practically in the same manner as oxygen, should produce its effect in about fifteen seconds (the time required for the gas to reach the nerve endings); and when the administration is discontinued, should be eliminated in proportion as the capsule of blood comes again in contact with oxygen. This, however, is not absolutely true with somnoform, for according to Doctor Rolland's statement and our own experience, its effect will last, on an average, about seventy-eight seconds after the face piece is removed, while the time required for the oxygen to reach the nerve endings is twelve to fifteen seconds.

Doctor Rolland's explanation for this phenomenon is that the analgesic sleep persists for a considerable time after the normal circulatory period, owing to an impression made on the nerve centers by the anesthetic element. This point is fully explained in a paper entitled "The Influence of Anesthesia (by S.) on Nerve Centers; Microscopic Researches on its Localization," read by Doctor Rolland at the annual meeting of the British Dental Association at Brighton, England, 1903.

The effect of somnoform upon the heart is to increase its action for several seconds. This adapts it to those cases where, from nervousness or fear or whatever cause, the heart needs a slight stimulant before beginning an operation. This increased action, however, is followed by a slight depression.

The respiration is also stimulated during the administration, with a slight depression following.

We have no record of a death caused by somnoform and in only one case in one hundred does it produce any degree of nausea. (In a part of the few cases where my patients have experienced nausea, I have attributed it to the fact that I gave more gas than was necessary).

The average time required to induce a complete anesthesia is about thirty seconds, with an average duration of seventy-eight seconds; and I have observed cases where the duration was easily ninety seconds.

The change in color of the cheeks and lips, if it can be said that any takes place, is very slight. The swelling of the tongue is less marked than in nitrous oxide anesthesia.

DISCUSSION.

Doctor Kirk, Kokomo:—We keep Somnoform in our office but use it very little. The fact is we have very little extracting to do, but the cases on which we have used it we have found it very satisfactory. I shall speak of it in connection with nitrous oxide gas because when I first became a member of this association, and I guess that was in 1867, we were talking about nitrous oxide gas every year for three or four years. I have an apparatus for making my own gas. Now I don't know that it is worth while for me to go into this subject, for this gentleman has told you about all we know about it. But I think the action of it is very similar to nitrous oxide gas; there may be a slight difference in methods of administering, and I think a patient goes under its influence quicker than under the nitrous oxide gas as a rule. It may be safer and it may not be. I know for a long time there were no deaths from nitrous oxide, there are now many death reports from it, now I have been ever fortunate as to success, and I have given it a good deal. I think Somnoform is better because a person can be put under its influence more quickly, and that is one advantage. And then there is another advantage and that is that the person is more completely under our control and I do not think it is nearly as liable to produce asphyxiation or nausea as gas. I have seen some cases of nausea, however, and if the essayist was out of the room I would tell about it. But his patient liked to knocked two chairs out of the room down at Greenfield, Indiana, but I do not blame Somnoform for that, for I think the Doctor was excited and gave too much of it. I like this method by which the Somnoform is given for you can then watch your patient carefully and you can see just what is happening, and if they need it give them plenty of air and it is quickly done. It is advantageous in that way. I think it is better than chloroform, although I have given that a great deal, yet, I am always afraid of it and do not like to give it. I prefer Somnoform to nitrous oxide gas.

Doctor Voyles:—I have just had a limited experience in administering this gas. I have had an apparatus in my office for some time, and as Doctor Kirk said he didn't need to extract I will say that I do have occasion for a general anasthetic but not very often, but I use one sometimes. I think this is all that has been claimed for it, but I have seen some distressing things in the way of nausea from it. I have had some cases that got dreadfully sick from the effect of it and it lasted quite a while in a number of cases. There was not enough nausea to produce vomiting, but I have had cases that did go that far, and I found that we are much more likely to have nausea than with nitric acid gas. I think possibly this is because I have given too much, but since that thought came to me I have not had occasion to administer it. If I used smaller doses possibly it would overcome this.

Doctor C. C. Miller, Plainfield, Ind.:—I have very little to say except in self defense. Doctor Kirk would have you believe that I extract teeth while he saves them. I am not announcing extracting as my specialty, but I do believe that we are justified in employing any method which our best judgments recommend to overcome the pain of tooth extracting, and Somnoform is the one which appeals to me most.

I was expecting Doctor White to help me out today but he hasn't done it. I will admit that I was a bit excited out here at The Eastern Indiana Dental Association when I had to stand before a large body of men, all of whom were ready to criticise me; but I do believe that a good part of the nausea from Somnoform is caused by overdosing. I think that was the case with Doctor White, and since that time more than before I have tried to see how little I can use to produce the desired effect, and I think it gives better results. I also allow more air to pass into the inhaler than when I began using Somnoform. I give my patients all the air they want and in that way overcome the fear of smothering, and they get enought Somnoform to go to sleep before they know it, then I close the air hole and give them a few breaths of pure Somnoform.

I have not had very much experience with Ethyl chlorid, but I have used it in a few cases with good results and I consider the Somnoform inhaler an ideal one for its administration.

Until I began using Somnoform I used nitrous oxide entirely, and while I felt fairly well satisfied with its results I liked Somnoform very much better in several ways.

As far as local anesthesia is concerned I have nothing to say for I do not use it.

Doctor Rolland places the average duration of Somnoform at seventy-eight seconds. I do not very often have an opportunity of timing the operation, but last winter at The Indianapolis Dental Society we observed the time in two cases. The duration was ninety seconds in one case and the other was a bit shorter.

I do not get such good results when it is administered the second time at the same sitting, and I would prefer that the patient come back another day, but if the case demands it I do not hesitate to administer the second or even the third time at the same day.

It has been suggested, I don't remember by whom, that when it is necessary to administer Somnoform the second time for the same operation, that the second administration be given before the patient regains consciousness. I have not used this method however, and have nothing to say as to its merits.

SOME THINGS ESSENTIAL TO THE SUCCESS OF A DENTIST.*

BY DR. BROWN, ELWOOD, INDIANA.

When we meet in our associations, we discuss the best ways and means by which we may become more efficient and thereby the more successful. We have discussions on the various methods of plate-work, the best ways of preparing cavities to be filled; filling material and the introduction of it, restoration of the features, treatment of the root canals, crown and bridge-work, and a great many other subjects, all of which are treated in a scientific manner, but there are some other things, we think younger dentists might take up and discuss; something older dentists have come upon one by one and stumbled over. If these things were pointed out, it might make the way easier for some who think that as soon as they are through college, they are ready for all classes of patients. In aquiring dental knowledge, we are apt to neglect art and run headlong after the scientific part. When I speak of a successful dentist, I do not mean the one who makes the most money, or the one who moves in the best society, though I would not condemn either of these; but I mean the one who does the greatest amount of good to those around him. To do this some qualifications other than are found in the college curriculum are necessary. The first thing a dentist has to do is to meet his patient, so the first thing we observe in a successful dentist is politeness. There is no policy like politeness, and a good manner is the best thing in the world to get one a good name. Manners are what vex or soothe, corrupt or purify, barbarize or refine. They give the whole form and color to our life. According to their quality they aid in morals, or they totally destroy them, and moral qualities rule the world. Give a dentist a good address, and you go a long way toward assuring his success. Courtesy is repaid by courtesy, and the whole life of him who is courteous moves along with less friction, than with him who is unsympathetic. Our duty in this matter does not depend upon the person. Men are not born equal. One man has more brains than another, while the morals of the other are better than the first, and the third may surpass both. They are not alike. There is an infinite diversity of gifts. In infinitely different degrees are men worthy of our esteem. In one thing they stand upon the footing of absolute equality—they have equal claim to kind and considerate treatment.

---

*Read before the Indiana Dental Society, June, 1905.

The next good quality to consider is sympathy. A sympathetic nature can comprehend the motives which govern the action of men. He perceives that men are oftener mistaken than they are willfully wrong, so he has less to worry him than the one who thinks that all are against him and he the only one that is right. If our patients sometimes doubt the wisdom in some things we have done, it is not always best to become excited and tell them how much we know and how little they know. If we are reminded that some one else can do better work than we, it is not manly to say harsh things about him who is held up as our superior, for that shows jealously, and jealously is one of the strings across the road that we had better avoid. Someone has said of envy, and it will apply to jealously that it is an illnatured vice and is made up of meanness and malice, it wishes the forced goodness to be strained and the measure of happiness to be shortened.

Habit is an art to be taken into consideration in a dental education. The power of habit either strengthens or weakens the will almost beyond belief. Habit creeps upon us so subtle that we are bound before we are aware of the habit. Our likes and dislikes will be as our habits are. Make sobriety a habit and intemperance will be hateful to us. Make prudence a habit, and recklessness will be intolerable. We may put ourselves in the way of acquiring any habit we may desire, habit of industry, habit of study, habit of patience, habit of thought, habit of being in our office at the right time. So may evil habits be overcome by avoiding all things leading to these habits. The formation of a habit reduces this simple plan. Apply yourselves to a given plan industrially, punctually and persistently.

Honesty is another requirement of a successful dentist. The most universally asknowledged requirement of an honest man is that he pays his debts. We should also be honest with our patients. They put themselves in our hands, and the arts of deceit and cunning continually grow weaker and less effectual to those who use them. On the other hand integrity gains strength by use, and the more and longer any man practices it, the greater service it does him by confirming his reputation and encouraging all to repose the greatest trust and confidence in him, which is an unspeakable advantage to the success of any one.

Another qualification—common sense. It is probably difficult to describe this. Some one defines it like this, "Common sense is uncommon sense." Addison says that fine sense and exalted sense are not half so useful as common sense, and he that will carry nothing but gold will every day be at a loss for readier change. The faculty of common sense is the soul of business, the soul of society, soul of everything. Common sense is opposed to all such things as carelessness, stupidity, rashness, credulity, and skepticism. The man with good common sense will see what ever is going on around him, and will accustom himself to his environments, and become at home among them. The man with good common sense is not the one who believes everything told him, simply because somebody said so. He is not the one who is constantly duped by men who go about the country selling all sorts of humbugs. On the other hand he is not the one, who believes only things which he has seen, and can fully understand, for he knows his intellect is bounded by a very small horizon. He is not the one who is always letting go some fairly good thing with the blind hope that he may get something better.

One thing to be avoided is evil speaking. Nothing is more silly than the pleasure some people take in speaking their mind. If we cannot say something calculated to cheer, gladden and delight, let us at least not pursue the contrary course. Our duty is to do as much good as we can to the greatest number of people, and if our means with reference to these subjects be limited, we should at least endeavor to restrain the evil propensities of our natures and curb and control jealously, ill will, and uncharitableness. We all have failings and infirmities enough. We all require the exercise of generosity and forbearance. Some one has said "There is so much bad in the best of us, and so much good in the worst of us, that it hardly behooves any of us to talk about the rest of us." When, therefore, we indulge a spirit of generous and charitable forbearance in relation to the errors of others, we in some degree at least entitle ourselves to a similar judgment with reference to our own.

Truthfulness is very essential to a successful dentist. He who habitually exaggerates, loses all credit for truthfulness, and people very soon learn to listen to what he says with a grain of allowance, and to divide it, as it were, by two or five or ten; so that when ever he does have something of real importance to tell no one will believe him, and he is thus the looser, by his desire to be sensational. An individual may be a perfect novice in business, may not possess brilliant talents, may be awkward in person, and unpolished in manners, but let it be known that he is a truthful man, that there is no deception, no falsehood about him, that he comes directly to the mark in all he says, and that his word is never to be doubted, and he will have a sure passport to the confidence of the community; and he who can command confidence can also command business. On the other hand let him be attractive in person, accomplished in manners, marked by energy, enterprise, talent and tact, but at the same time be addicted to falsehood, and the effect will be to create distrust, excite suspicion, destroy hope, and to impair prospects.

We might name and discuss other good qualities of a successful dentist, but if the young man take these as a foundation, he may find plenty of material on the way with which to build success.

DISCUSSION.

DOCTOR J. E. NYMAN, Chicago:—Doctor Brown has given you a great deal of common sense advice. There is no question but what a man's bearing toward his patient and the public has much to do with the establishment of his practice and the maintenance of a permanent practice, just as does his skill with his instruments and his judgment in what to do in all cases. There are many men today in our large cities who are enjoying lucrative practices who are men of limited skill and men who are rather unwise in their judgment, yet they have lucrative practices because back of it they have a fund of common sense, of tact and diplomacy; their scientific sense may be deficient but back of it all they have these other attributes and their patients keep coming year after year and pay them good fees.

There is much to be said upon the personal appearance of the dentist, but I will only mention one essential point. I think every dentist should give special attention to his fingers and his finger nails, and if at all possible should visit a manicure at least once a week. It is of prime importance that the fingers of a dentist should be as immaculate as possible. And this is a point many dentists disregard altogether, albeit one of great influence upon a patient.

Now our time is very limited tonight, and I desire to say nothing further than to commend very highly the paper and the spirit in which it was presented.

Doctor Cravers:—I know a dentist in one of the large cities of this country. He is a successful dentist and has an enormous practice. He makes twenty or more thousand dollars a year, which I think is pretty successful. He speaks of fees, he never calls them prices, except in regard to material. He is the most courteous gentleman I ever knew among dentists, and he is the most suave citizen you ever saw. When once a person gets into his claws he keeps him. Now what constitutes a successful dentist? I know a dentist in Ohio who made a boast that he never makes mistakes. He was considered wonderful. But it was found upon investigation that sometimes this gentleman does make mistakes. I make mistakes, and have made a good many of them, and I expect to make a good many more before I die, because I don't expect to die for sometime. I think, however, that possibly one of my greatest mistakes was in taking up dentistry. Another mistake I have made is in trying to teach other fellows to do the way I do. I have made many failures, then I suppose I have not been a successful dentist. I do not believe I ever met anyone who could just tell me what elements constitute a successful dentist. There was a young man who attended the school here in Indiana who sat down in his chair very precisely, wore his hair pompadour, his coat buttoned up tight, and looked at the professor, but his face did not indicate that he understood or appreciated what he was saying, and his examinations did not indicate that he remembered what was said, and he was not considered or regarded as a bright student. He went to another state east of here, and the things he does are remarkable. I was in his town several years ago; I found that he had a shop with three or four chairs. Now what constitutes a succesful man? What is a successful dentist?

◆

MISTAKES OF CITY DENTISTS.*

BY F. J. SPARGUR, D. D. S., CLEVELAND, OHIO.

The essayist feels that he should be granted the privilege of making a brief explanation concerning the title of the paper presented herewith. He begs to say that it has never occurred to him to sit in judgment on his fellow practitioners. Not from any desire of his, is he presenting a paper on "Mistakes of City Dentists;" not because he does not think that city dentists do not make mistakes, but, because while himself living in a glass house, he hesitates to throw stones. The subject was assigned and the writer meekly submitted. The dental profession is made up of men who are human, and as it is human to err, no apology is necessary. The better class of the profession, it can be said with truth, are anxious to reduce their mistakes to a minimum and no class of men are quicker to rectify their errors when they are convinced that such exist. I am at a loss to differentiate between the mistakes of the city dentist and his country brother, for the routine of their existence is much the same. In one particular at least, the city practitioner has an advantage. I refer to the city dental society. The opportunity to meet in a social and fraternal way, his co-worker in the dental world, at stated times throughout the year, is of inestimable advantage in many ways. Around a common board friendships are formed and renewed. Good fellowship abounds, and the ethical spirit is strengthened. By the exchange of views and methods appertaining to practice, much of value is given and received. A kindly feeling, one for the other, is fostered that has a far-reaching influence for good in cementing together the better element of the profession.

I consider that the city dentist who withholds himself from the benign influence of his city society and thus, in a measure, isolates himself, hermitlike, makes a most serious mistake, a mistake that reacts against him in many ways. Meeting his fellow dentists, on a common ground, in a kindly, fraternal spirit, will militate against other mistakes, viz:

First: *Getting into a Rut.* Because of a narrow-minded, self-sufficiency, or lack of knowledge, he practices methods that are obsolete, or at least can be improved upon. He has at his disposal the many dental publications, it is true, but it is more than probable that he does not read them to any great extent, and if he does, the benefit is by no means as great as it would be were he to hear the pros and cons of methods discussed by the men of his own city with whom he is acquainted and of whose ability he has knowledge.

---

*Read before the Northern Ohio Dental Association, June, 1905.

Second: Jealousy. The green-eyed monster supposed to be principally employed in disturbing the serenity of those afflicted with non-fatal afflictions of the heart, will nevertheless often rankle in the minds of those who are not broadened and made generous from contact with their fellows. If a man is successful beyond the ordinary, there is some other cause than luck or fate; there is a reason. The city society is an excellent place to find out that reason and to have stimulated within us a desire to excel likewise.

Third: Unprogressiveness. The papers presented at the regular meetings of the city society, the general discussion entered into by the society members, the criticisms and the commendations, the new methods and the old, stimulates a spirit of progress, an ambition to excel. Its tendency is against slovenly, slip-shod work, and in favor of modern, up-to-date, careful methods that have been brought forth, dilated upon and accepted by the society. The dentist who wilfully or carelessly denies himself the stimulating influence of progess is short-sighted and wasteful of his opportunities.

Fourth: Weakened Professional Morals. Whatever the temptation, a friendly, personal feeling toward our brothers in the profession, begun and fostered by the city society. renewed each month at the society meetings, will have a decided and abiding tendency to retard or prevent and underhand, ungenerous and unprofessional conduct in the treatment of the patients of other dentists who, for any reason, come into our hands. The spirit of high ideas and professional ethics of a proper standard, encouraged and furthered by the society, will have a healthful effect in curbing any desire to indulge in practice unbecoming a professional gentleman. The writer firmly believes that while the dental society should by no means allow itself to be made a guilder of tarnished professional reputations, every effort should be put forth looking toward the upbuilding of professional dignity and integrity.

The essayist believes that there are many men today who are a credit to their college, to the profession and to themselves, who have been saved from the fatal mistake of becoming an advertiser, through the influence of the city dental society. The writer hopes that his hearers will not understand him as claiming that all men outside of the city societies are guilty of the mistakes mentioned. Nor does he wish to be understood to infer that all of the society men are free from suspicion regarding them. He believes that there are those who, under the protection of the societies' reputation, practice petty irregularities far more contemptible than the open outlawry of the confirmed advertiser. In all ages, and in all walks of life, the blackguard has stalked under the guise of righteousness. When all is said, the writer believes that the city dentist who does not avail himself of or achieve membership in his city society makes a mistake that militates against professional and financial success.

What has been said regarding the city society can be applied in some degree to the larger organizations of the county, state or nation. The wide interval of time between the meetings of the larger societies, however, preclude their influencing their members in the same way or to the same degree. They, nevertheless, fill a place all their own, equally desirable perhaps with the city society. It is thought, by the way, that the busy dentist can belong to too many societies, thereby dividing his interest and allegiance into too small parts to have any of them very effective. A dentist who allows his office to be made a repository for all the dental journals published, runs the risk of becoming bewildered by the quantity of the feast and, by being unable to choose the best from the assortment, shuns the whole. Two or three leading journals should be sufficient for the busy dentist.

A paper from my pen on the "Mistakes of City Dentists" would not be complete without reference to the subject of *health* and I beg your indulgence for a few minutes devoted to this vital topic. I desire to take the position that the dentist who, in the grind and grime of the struggle for position and power both professional and financial, disregards that most desirable and needful attribute, *health*, is making the most deplorable mistake of all. Long-headed men sometimes display a most short-headed regard for the welfare of the most wonderful and complex machine in their possession and, withal, the most necessary and important, and the most difficult to repair when once it has become defective. Our bodies come to us without much effort on our part. The fuel to keep them in running order is supplied with the best of grace. The distance from the lips to the stomach is not great, but the passage of food over this area gives the average man so much delight that he counts not the cost before or after. It is human nature to place a low valuation on that which is easily acquired. Many of us value our bodily health and vigor below par, for this or some other equally foolish reason. The average business and professional man abuses this most priceless gift in so shameful a manner that it is a cause for wonder that the bodily mechanism does not become discouraged, disgusted and stop long before it does, and without warning. To specify, the daily routine of the average city dentist is, the writer believes, somewhat in accord with the following outline: He partakes of a more or less hearty breakfast as a matter of habit, and takes the shortest route to the street-car. If he lives within a radius of three miles of the business center, the car is probably crowded to the-hang-on-straps. In the winter, spring and fall, say eight months of the year, the car is a closed one, the atmosphere within the inclosure is as bad as possible, for a half hundred or more people have been busy breathing it for some time. Into the midst of this mass of men and microbes our dentist pushes and shoves his way, there to remain until his office stop is reached. A quick step or two and the four walls of his office surround him. A few minutes more and he is bending over his patient. Perhaps no labor is more taxing to the nervous and physical powers than that with which he will be employed for the next seven or eight hours. When the noon hour approaches, he will tear himself away to some restaurant where he bolts a hurried meal. When the day's work is ended, the journey of the morning in a crowded car is repeated and our dentist is at home again. His dinner is the principal meal of the day and it is hoped that he takes his time to it. He spends the evening out, perhaps, but probably is too tired to do so. He finally retires to his bed to rest. The microbes of the crowded car and close office hover over him as he sleeps, for the sleeping-room is poorly ventilated. During the twenty-four hours, three full meals have been taken, fifteen minutes all told spent in the open air, during which our dentist has walked, perhaps, one mile. He does this six days a week, forty-eight or fifty weeks a year. Nature is wonderous kind, it seems to me, to men who abuse her thus, for some there are who, living after this fashion, keep going for many years. The majority, however, pay a heavy penalty in shattered nerves, sluggish livers and general disability.

Some of our city dentists are so fortunate as to have a practice so large that seven or eight hours a day is not a sufficient time to properly care for it. They must needs tarry at the chair or in the laboratory until late hours. Sundays and legal holidays find our busy man at the grind. He has been known to boast of it to his patients and fellow dentists, while his lack-luster eyes and spiritless body bore mute testimony to the strain. The fact that they are witnessing a case of slow suicide is borne in upon the observer. The word, mistake, hardly does the matter justice. He who rates *wealth* at a greater value than *health* has but a short-sighted conception of life.

I desire to touch for a moment upon one or two other phases of the city dentist's career.

We often hear it stated that the average dentist is a poor business man; that he is an easy victim of the wily logic of the wily salesmen of stock in this or that concern; that the man who has a so-called "good thing" to dispose of, can find another "good thing" in some dental office or other. The writer has been approached with easy-money propositions three or four times in a single day by as many different men, with as many different schemes. It is my belief that the most of these sure things are so managed that the dentist acquires his business education, slowly, surely and at some financial sacrifice. The profession of dentistry, however, does not contain all of the men who have had occasion to cast a weary eye back along a pathway strewn with the wrecks of financial air-castles. Much could be said, perhaps, of the business mistakes of the city dentist. A business house would have a poor rating in Dunn's or Bradstreet's reports whose system of collecting and paying bills contained so many unavoidable mistakes as do those of some of our members. Perhaps a discussion of this phase of our existence is neither necessary or desirable. The writer would like to urge, however, that promptness, and businesslike methods be insisted upon in our dealings with the public-at-large, to the end that the reputation of being poor collectors and worse payers, shall not long have a lodgment in our midst.

In closing, the essayist begs to say that his criticisms, if they can be so called, have been made in the kindliest spirit and with an eye single to the honor and progress of the beloved profession to which he owes and freely gives greatful allegiance.

DISCUSSION.

Dr. W. M. Megginson, Toledo, O.: In speaking of the feeling of fellowship and good-will generated at the local societies, the essayist has left out a gentle warning to the Pharisee who goes to society and thinking to make a good fellow of himself, calmly says, ''O, yes, I get $15.00 for a crown, and would not think of putting in a gold filling for less than $3.00,'' when if the truth is known, he will take most any price so he can land the business, and his remarkable use of antiseptics and disinfectants is a pipe-dream all in his own mind, and not in his office. This condition is all too prevalent, and is a mistake that can be remedied by our remembering to be honest, first with ourselves, then we can be honest with others.

This feeling of friendship is good for all concerned; we meet, become friends, compare notes, find some one has something to tell us that is worth more to us than we can calculate. This condition *prevents* our ''getting into a rut,'' and the man who does not grasp this opportunity of *post-graduate work* is lost, and it is only a short time until he is an old fossil and a back number.

In the essayist's ''items'' he has left out that all-important one of *mechanics.* We are mechanics of the highest order if we are successful dentists. I do not mean monetary success, but in its true sense of the word, namely: in the treatment and care of teeth. The number of men practicing dentistry today who really know what mechanics are, is indeed small as compared with the total number. That is the reason we see so many *abortions* which are called *dental services.*

In item four, speaking of ''weakened morals,'' it is too often the case that the work is slighted because the dentist cannot get the *price* for doing it; he cannot take the time to make his joints right, or there is lack of material. I even heard of a man who backs his facings with platinoid, and he pretends to be a Christian gentleman. I am sorry the essayist did not mention this point, because we are all so liable to make the mistake of *slighting* things, and I believe it is one of the chief curses the profession has to fight. We should remember that when we slight our work, we are stealing.

I would like to add that, in my opinion, any dentist makes a gross mistake who ignores the use of tin in the filling of teeth. The first principle in business is, to keep *down* the first cost. Now, by the use of tin that principle is brought into active operation, and the result is this: a better filling is made; that is, will save the tooth longer; it costs less, takes less time to introduce it, and the compensation is the same as where all gold is used. In the six years that I have paid special atention to tin filling, I will say that when I see one of my fillings having tin in it, I am never afraid to examine it. I do not mean to say that I never have a *failure,* for I have plenty of them, the same as every one else, but the *chances* are so good that there is *no* failure, I feel *secure.*

The use of tin, while not new to the profession, has been sadly neglected, and in my opinion any one who neglects so worthy a material should pause and consider most thoroughly before passing so good a friend by. I am indebted to my esteemed friend and professor, Doctor Ambler, for my start in using tin, and will say I have had fewer failures since I began its use.

Doctor Kenyon: I think one of the greatest mistakes for any man, professional man or otherwise, a mistake which is so often made by men, is the stoppage of growth, the ceasing of that eternal reaching for something that is beyond. Just the moment that any man considers that he knows enough, that he can do his operations well enough, I think that man's future success is doomed. He may get along in some sort of a way; but, notwithstanding, we find a great many men who do not seem to have made any progress at all for many years. They are doing the same thing today that they did a great many years ago and, gentlemen, it is a mistake. Do not believe that you find all of those faults in the country. I believe you find some of the best dentists in the State in the country. The men who stand at the top, and likewise we have the very worst. We have the two extremes in the city. We have great admiration for the country dentists. I believe in the city there are opportunities which come to the city man, joined with natural ability, that make him a greater man than we have in the country places, not disparaging at all the man who practices in the country.

The greatest mistake possibly that a man makes is to underrate the value of his health. Once the health is impaired the earning capacity is impaired. He cannot do the amount of work or the quality of work if his body be not well. He cannot do the thing as well as if he were healthy. The reason possibly that we abuse our bodies in the practice of our profession is that we are all of us reaching out further and further, more and more greedily for the fee that comes at the end of the operation. I am not criticising any one for that. I am just as much in favor of receiving a fee as any one of you, and more so, but the thing that I want to bear upon particularly is that we are working too long hours for a small fee. Now, when a man has become so busy he has to work Sundays and holidays and nights and mornings before office hours, it is time for him to raise the amount of his fees for a given operation. If he is so busy, he has a perfect right to expect a larger remuneration for his time. It is the greatest mistake to collect a small fee for services and work for so many hours. Better collect larger fees and let some other fellow who needs the work do a part of the work.

Now, as to the business methods. I know this is a delicate subject. I know every fellow thinks he can take care of his business better than any one else can for him. The essayist has spoken of the reputation that the dentist has for being poor pay among business houses. If you will make inquiry among the business houses in your city, you will find there is more or less suspicion against many of them. Of course there are a certain number of men whose personal reputations are better than their professional reputation, but the very fact that a man is a dentist has some effect of his getting credit at the business houses. As an illustration of that, not long ago a member of a family that had been my patients came to me with an apology for having had work done by another dentist. He said, "Dr. X. owes us some bills, and we could not collect them, so we thought we would send some one there to have some work done and possibly we can get our money out that way." Now, that gentleman is a professional man in good standing, and yet that statement was made. Why should dentists have anything hanging over them in regard to their ability to pay bills? It is a shame upon the men and a shame upon the profession. The reputation for *being easy* is vastly more costly in money and trouble than loss of a few undesirable patients from being firm in business matters. I know that is so in my experience. The reputation of being easy will cost you more than the losing of a few such patients. Just as soon as you work for a patient and you allow him to have all the time he wants, he will impose upon you, and you will have the old illustration that we see so many times, that birds of a feather will flock together. If such a patient recommends a person to come to you, you can look out, for he will be the same kind of person. If you force a person to pay, and if he recommends some one, he will say, "If you go to him you will have to pay your bills." I say the reputation of collecting your bills is one of the most valuable assets a professional man has.

It is the duty of every dentist to collect his bills. I have frequently put bills with my collector and told him to collect them at any cost. I frequently tell him to collect if it takes the whole amount of the bill for the service. Because I think that such a course is proper because it teaches people to pay their bills, and there are a whole lot of people who need that lesson very much.

Dr. G. S. Junkerman, Cincinnati: I think the first mistake the city dentist makes is in not becoming a country dentist. If you look at the faces of these country dentists, and the expression of their countenances, you will find they come here a pretty happy lot of men, and when you look at the city men, most of them have crow's feet in their faces, caused by struggling along where competition is so great. In regard to the business methods of dentists I really believe the dentists are as honorable as any men and the only reason they do not pay their bills is because they have not got the money. They are perfectly willing to. In this light we must recognize the fact that dentistry is not nearly so productive as some professions. Those of us whose assets are small may be able to earn a compensation to a certain extent, but the returns of dentists are not as great as in mercantile life. You all know in mercantile life that ninety-five per cent of the men are failures. Why should it not be in dentistry just the same? We are part of the great animal kingdom of the world. Why? Because the majority of them has not a competency when they die? I want to hang up a picture that I can look at every day, of a man who leaves a large estate and has practiced dentistry all his life.

In regard to the city and country dentists, the question resolves itself down to one point, and that is the man behind the gun. The country dentist can come to the city and make a failure, and the city dentist can come to the country and make a failure. If he is going to make a success, he will be a success in the country or city. It is that way with success in business, and certainly that way with success in dentistry.

Doctor Brown, Columbus: Another thing that might be mentioned as a fault of dentists generally is neglect. I have had considerable correspondence with dentists over the State, relative to State society affairs and Board affairs, and I wish to say that I think one of the greatest mistakes that dentists of the city and country make is that they seem to have no care whatever for the answering of correspondence.

I have sent out correspondence, enclosing stamped envelopes, and all those things, and received no replies, more than once I assure you. I think that is one mistake that many dentists make. It is not confined to the city alone nor the country alone. If they would be a little bit more careful in those small things they would acquire system that would assist them all through their professional life.

SUGGESTIONS

SEPARATING MEDIUM.

A good separating medium is made by dissolving paraffin in gasoline. Put in all that the gasoline will take up. To use, spread solution over impression lightly with a camel's-hair brush.—*Hints.*

REMOVAL OF RUST FROM INSTRUMENTS.

Place them over night in a saturated solution of zinc chlorid The rust will disappear through reduction. Rinse in hot water, place in a hot soap and soda solution and dry. Polish with absolute alcohol and chalk.—*Pacific Medical Record.*

METAL FOR MATRICES.

G. W. Schwartz, Chicago.

When I first began the burnishing of platinum matrices, I tried to make the metal just as thin as possible. I would roll the metal out as thin as I could, fold it and roll it through the mill again, and then fold it so that four thicknesses were rolled through. I do not do so now, for the reason that I do not get enough cement between the inlay and the cavity wall. I believe you must have a certain amount of cement between the cavity wall and the inlay to get the best results. and when the platinum is thinned down beyond a certain point, something is lost in the strength and adhesion of the cement to the cavity wall. The main thing is accuracy and simplicity. We want to lose all the machinery we can about dentistry; the simpler we get everything, the better can we do—the better men do we become.—*Dental Cosmos.*

SPOTS IN PINK RUBBER FACING.

F. A. Graham, Harbor Springs, Mich.

When the red or black rubber is forced through the pink and shows in front, the spots may be drilled out with an inverted cone bur and the cavities filled with pink gutta percha. It will harmonize with the pink rubber and not be conspicuous in the mouth—*Dental Review.*

PREPARING SENSITIVE CAVITIES.

J. W. Gale, Cologne, Ger.

The first application of the bur can be made absolutely painless in the most highly sensitive cavity by simply taking ethyl chloride on the bur point and bringing it quickly into contact with the tooth. It can be done in the hundreth part of a second and there are very few teeth that could not be operated upon in two seconds with ethyl chloride.—*Dental Review.*

ADAPTATION OF PARTIAL DENTURE.

When only one or two teeth remain, as the two upper canines, for instance, a closer adaptation may be secured by slightly trimming the plaster teeth and completely encircling them with soft or velum rubber. Pack the ordinary rubber around this and vulcanize as usual. This will give a support superior to that given by clasps and less harmful to tooth structure.—*International Dental Journal.*

PUNCHING HOLES IN BACKINGS.

S. Preston, Bramwell, W. Va.

To punch holes in backings with accuracy I have found nothing more convenient than a small pair of compasses with screw adjustment. Set the points by the pins in the facing and try by punching holes in a piece of copper plate the same gauge as the backing; adjust if necessary, then punch the backing and place the side with the bur made by the points away from the facing.—*Dental Cosmos.*

IMMEDIATE ROOT FILLING A MISTAKE.

T. B. Noyes.

Most men who use cocain for the removal of pulps fill the canals at the same sitting. That is a mistake. I never do that unless it is absolutely necessary, and then only under the most favorable circumstances. It is just as necessary to fill root at a second sitting after the use of cocain as after the use of arsenic, and for the same reasons.—*Dental Review.*

OPERATIVE PROCEDURE FOR EXCAVATING SENSITIVE CAVITIES.

H. L. Schaffner, Florence, Italy.

There is a distinct difference in the sensitiveness, dependent on the manner in which the dentine is cut. Success in many cases may be achieved by cutting the dentine in the following manner: Instead of using the usual bur and cutting transversely, cut vertically to the axis of the dentine and with a drill with a flat point cut a series of small holes and the operation can then be continued with half the pain that would be otherwise occasioned. What generally troubles most people is to get an anchorage, but by drilling a series of small holes the dentine may be cut with very little pain compared to that caused by using a drill in the ordinary manner.—*Dental Review.*

TREATMENT OF PYORRHEA.

T. W. Brophy, Chicago.

If the teeth are becoming loose then an effort should be made to make them firm; they should be held in place by some means long enough for the tissues to get well. Remove the deposit and the tissues will get well, unless the patient is run down physically, or unless we have to contend with some general systemic disturbance or low state of vitality, resulting from syphilis, from phosphorus, lead or malarial poisoning. There may be a low state of health from inactivity of the stomach, bowels and liver. All these are factors which should be considered. Systemic treatment will put the patient in as good condition as possible, and then we may treat the local condition in almost all cases with a reasonable assurance of affecting a cure.—*Dental Review.*

TANNIC ACID AND IODINE FILLING FOR ROOT-CANALS.

N. N. Wycoff, Trinidad, Colo.

A thread of cotton is wrapped around a smooth broach. dipped into tincture of iodine, then into finely powdered tannic acid, then forced to the apical end of the canals. Dry the canal so that all excess of iodine is removed (and there should be very little) ; wipe out canal with alcohol and then fill with whatever material suits the operation. I generally use medicated gutta-percha covered over with cement.

Discoloration of tooth will result only from carelessness in method of operation. Sepsis will not recur, as you have a material which becomes as hard as cement, sealing the apical foramen perfectly, non-irritant, antiseptic and germ-proof.—*Items of Interest.* [This method was presented a year ago in THE DENTAL SUMMARY in an original article by Dr. G. S. Junkerman, Cincinnati, Ohio.—*Editor*].

PORCELAIN BRIDGES.

F. E. Cheesman, Chicago.

For lower bridges a round 14-gauge iridio-platinum bar should be bent to conform closely to the ridge, extending a second bar straight across from abutment to abutment, re-enforcing with a small brace between, building porcelain around this so that it will cover the bar and rest snugly upon the gum. This will result in a more hygienic bridge and one that will not irritate in the least, the tissues taking much more kindly to porcelain than to platinum.—*Dental Era.*

DO NOT USE DIOXIDE OF HYDROGEN IN A MAXILLARY SINUS.

M. L. Rhein, New York.

I have been asked whether I would use dioxide of hydrogen in a maxillary sinus. I would say most emphatically, *no.* In the first place, unless you have secured two large counter openings in the antrum, you will produce tremendous pressure by the liberation of the extra atom of oxygen and cause your patient a great deal of pain and suffering; consequently I say no, do not use it.—*Pacific Dental Gazette.*

A GOLD INLAY WITH SWAGED OCCLUSION.

P. T. Barber.

Take modeling compound impression of cavity; fill with a quick-setting cement, separate in warm water (do not use hot water or dry heat as it will stick to the cement), place cement die, or model, in Coat's swager, using dental lac to retain it in place, swage matrice of 36-gauge pure gold.

Place matrice in cavity (after first annealing it) and burnish to margins, remove and anneal, replace in cavity, make a very stiff mixture of quick setting cement, work between finger and thumb until cement starts to set, then place into cavity with matrice in position, and have the patient close their jaws, forcing the cement firmly into the matrice and cavity and giving a perfect occlusion.

Remove the cement and matrice together, carve the cement to allow for thickness of 32-gauge gold, and give shape to the inlay, place in swager, matrice side down, swage pure gold 32-gauge over cement, remove from swager, cement out of the matrice, solder the two pieces together.

Make a hole in matrice, fill the inlay about one-half full of solder, leaving it hollow to be filled with cement when it is set.—*Exchange.*

SOLDERING WITHOUT BLOWPIPE.

L. G. Noel.

Much of the soldering with 18-and 20-carat gold may be done without a blowpipe and with less risk of fracturing porcelains of melting off gold backings. Trim and shape a lump of charcoal so that it will fit into the burner without tilting, and with a depression in the top for the reception of the piece. Build charcoal log-cabinwise around the work and roof over with flat pieces to radiate the heat back on the work, with an opening at the front to give a view of the piece and opportunity to add solder if needed. Clip the solder into small bits, dip in cream of borax, handling with pliers, and apply sufficient to solder the case. Light the gas and let it heat up, having the burner so located as to avoid side draughts. A surprisingly high degree of heat is thus obtained.—*Pacific Dental Gazette.*

METHOD OF USING PLATINUM MATRIX WITHOUT INVESTING.

C. Van Wyck.

Secure a piece of platinum plate ½ x ¾ inch and slightly bend up one corner, so that it may readily be grasped by the pliers.

A small camel's-hair brush dipped into powdered borax, then held an inch above the platinum plate and gently tapped, will deposit a thin coating of borax upon the plate. Heat gently and gradually fuse the borax.

When the matrix has been secured, place it upon the platinum plate and put into furnace. The borax will nicely tack the matrix on the plate, and by grasping the upturned corner of the plate with pliers, inserting and removing it from the furnace thus, all handling of the matrix itself is avoided and no investment necessary. A redusting of plate with borax will be necessary every third or fourth inlay that is baked.—*Dental Cosmos.*

CAMPHO-PHENIQUE AS A LOCAL ANAESTHETIC.

Burton Lee Thorpe, St. Louis.

All operations in the mouth should be preceded by the application of a local anaesthetic. In many mouths nausea, even vomiting, is caused by the insertion of fingers, instruments, or impression-trays.

To avoid this especially is campho-phenique indicated to obtund local sensation and prevent pain incident to the removal of calculus, polishing teeth, wedging, applying and ligating the rubber dam, removing loose roots, and to prevent nausea, gagging etc., prior to taking impressions.

Nothing to the writer's knowledge acts so nicely as ten grains of finely powdered cocain added to one fluid ounce of campho-phenique (original package). This makes approximately a two per cent. solution, which, when applied on a large-size pledget of cotton to the entire mucous surface of the mouth, completely obtunds local sensation and overcomes nausea.

In cases of odontalgia from an exposed pulp a warmed application of this solution on a pellet of cotton usually relieves the pain, and for treating sensitive cavities preparatory to filling it is of equal value when the remedy is sealed in the cavity with temporary stopping or gutta-percha.—*Dental Brief.*

TREATMENT OF PUTRESCENT PULPS.

J. P. Buckley, Chicago.

Whether there are fats present in the original pulp tissue or not, in the treatment of putrescent pulps we have to take into consideration the presence of fatty compounds, because chemists have proved conclusively that in the decomposition of this albuminous material fat is one of the end products.

Ɽ.	Formalini.	
	Creasoti,	a. a. f ʒ j
	Alcoholis,	m xx

M. Sig: Use as indicated.

Now you can get excellent results in treating putrescent pulps if you will use the first formula under this heading: Formalin and creasote, equal parts, to which alcohol is added. You will see in some journals the suggestion that you can use equal parts of formalin and creasote, but if you know anything about pharmacy, or if you have tried to mix them you know that they will not make a clear solution; but we can add alcohol to this mixture for the purpose of clearing up our solution.

Some journals have suggested that you can take equal parts of formalin, creasote and alcohol. Alcohol is only added for the purpose of making clear the solution, and all that is necessary is to take enough alcohol to clear up the solution. I find that for a drachm, approximately, of the formalin and creasote 10 minims of alcohol will be sufficient.—*Dental Review.*

TO PREVENT TEETH FROM RECEDING FROM THE RUBBER IN VULCANIZING.

C. Soulard.

Let the temperature go up very slowly and vulcanize rather under than above the normal degree. Heat the flask in boiling water and the rubber over steam, taking care that it does not burn.—*Dental Brief.*

TO PREVENT BUBBLING OF BORAX.

Mix a minimum of gum-arabic and water with the borax on a glass slab.—*International Dental Journal.*

ROOT FILLING.

J. P. Buckley, Chicago.

℞ Thymol,	gr ij
Menthol,	gr iij
Eucalyptol,	f ʒ j

M Sig: Use as directed.

Now, after you get abscesses treated, or after you have removed the pulp by pressure anæsthesia, or by the use of arsenic, it is necessary to fill the canal. In performing this operation a good many of us believe that gutta percha has served us too long and too well to be discarded. Those of you who think that there is virtue in gutta percha as a root canal filling, and who are in the habit of using eucalyptol can get better results if you will use this formula. Eucalyptol is used because it is a slight solvent for gutta percha. There is a difference between eucalyptol and oil of eucalyptus. If you use the latter, you will have a beautiful case of pericementitis every time. Oil of eucalyptus contains three constituents, one of which is eucalyptol, which distils over first because it is most volatile of the three. Eucalyptol, while it is not as irritating as the oil of eucalyptus, still it is irritating. By adding thymol, which is a disinfectant, and menthol, a local anæsthetic, you can modify the irritating properties of eucalyptol, as well as enhance its disinfectant power.—*Dental Review.*

THE HEFFELBOWER METHOD OF REPLACING FACINGS ON CROWNS OR BRIDGES.

J. E. M. Heffelbower.

Select the proper facing to be used and cut off the pins to about 1-16-inch in length (according to the thickness of the gold of the bridge or crown), then make a tube of gold or platinum 32 or 34 gauge, the proper size to fit over the pins in the tooth and long enough to extend through the gold and backing on bridge or crown. Now solder the tubes to the pins in the tooth with a very small grain of gold solder, or soft solder may be used.

This gives us a tooth with hollow pins. Drill holes through backing to correspond with size and position of tubes. Countersink holes on palatal or lingual surface with cone bur in right angle. Dry the surface of backing and tooth, apply a little cement and press home. Before the cement hardens expand the ends of tubes till they fit the countersink, by using a bud-shaped burnisher in right angle rotating the burnisher rapidly using considerable pressure, at the same time holding facing firmly in place with the other hand. The burnisher operated by the engine will expand the tube without tearing it as a hand burnisher might do. The end of tube may then be filled with gold or any material suitable for filling. Amalgam should not be used unless platinum is used for the tube. A very good burnisher can be made of an old bud-shaped bur by polishing away the blades. By keeping the tubes made up a tooth may be replaced on a bridge or crown in a very short time, and I believe it to be as durable as any method of repairing without removal of work from the mouth. —*Texas Dental Journal.*

SADDLE BRIDGES.

J. D. White, St. Louis.

For some time I was prejudiced against the use of a saddle, believing it uncleanly, but after repeated failures from fractured porcelain I came to the conclusion that the success of this work, especially in the molar or bicuspid region, would require something in the shape of a saddle or box construction to give the needed support.

In the application of this class of construction it is absolutely necessary to observe all details carefully and let nothing go undone that would jeopardize the finished piece. Commencing with the root preparation, I should recommend that after the peripheral trimming is finished and band adjusted the root should be ground down as short as possible, avoiding the saddle preparation of the root in this class of work. Have a gradually inclined plane, or, where stress is direct, prepare base as flat as possible. This would give the maximum bulk to the porcelain without giving undue prominence at the cervix. Bands should be made of platinum, 28-gauge for molars, 29-gauge for the anterior teeth; floor should be 32-gauge for anterior and 30-gauge for molars. The floor should project slightly beyond the lingual and labial or buccal edges of the band, and the resulting shoulder should be filled in flush with 25 per cent. platinum solder. This is nicely rounded and finished, and when adjusted to the root presents a surface to the gingival margin that is absolutely non-irritating.

Adjust bar as close to facing as possible under the pins, have as much contact on abutments as possible, and truss from bar down to saddle with 16-gauge iridium-platinum wire of 26-gauge iridium-platinum plate one-eighth inch wide, in at least two places. To afford support for the lingual cusps against any possible line of cleavage, small bands one-sixteenth of an inch wide of 28-gauge platinum are adjusted to floor of abutments and to saddle at extreme lingual edge, extending well into proximal spaces, after soldering saddle is trimmed to outline of bands. Where contact of all parts does not exist it is absolutely necessary to use 25 per cent. platinum solder throughout the entire assemblage of the parts if the greater degree of strength is to be obtained. However, if care is observed in obtaining absolute contact of all parts to be soldered, pure gold may be used, and if it is thoroughly fused until all surplus disappears or becomes alloyed with the platinum there will be no danger of any charge during the subsequent fusing in furnace.—*Dental Era.*

A NEW METHOD OF MAKING RETAINING POINTS IN PORCELAIN INLAYS.

B. Palatschick, Paris.

After having cut a piece of platinum foil of a convenient size, it should be lightly pressed into the cavity. A ring is afterward prepared with half-round wire, either pure gold or platinum-gold alloy. The alloy must be selected according to directions given later, and the thickness of the wire should be, as one will see farther on, proportionate to the depth of the cavity and to the groove we desire to obtain. The shape of this ring will approximate to that of the bottom of the cavity, but it will be a little smaller. It is placed on the platinum foil, the round side touching the platinum, and then a very little piece of pure gold foil for filling (not thicker than say No. 5 or 6) is inserted between the ring and the platinum foil. Place the whole over the Bunsen burner flame, or in an electric furnace, and withdraw it when the gold foil is melted, and consequently the half-round wire soldered to the platinum. The platinum foil provided with the ring is now pressed well into the cavity of the tooth and the inlay finished as usual. 'After baking, remove the platinum foil as usual, and with a chisel or a wheel expose the ring. Then boil the inlay in a few drops of aqua regia in an evaporating dish. The ebullition should last five or ten minutes, according to the size of the ring and the alloy used, and ought to be done under a well-ventilated chimney. After this boiling the metal will be dissolved, and there will be in the inlay an undercut groove the shape of the wire. The author feels that this method, which of course is unnecessary where it is easy to obtain an excellent anchorage by grinding with a wheel is of great use in small, thin inlays which have not to support a very great masticating strain. The half-round shape of the wire is not essential, a wire triangular or otherwise will produce depressions of an excellent retaining form.—*British Dental Journal.*

OBTUNDER FOR SENSITIVE DENTINE.

J. P. Buckley, Chicago.

I desire to call your attention to a few practical prescriptions, and in doing so it is my intention to emphasize the pharmacy involved in the combination of these various drugs, as well as to describe their dental and therapeutical application.

℞.	**Menthol,**	**gr xx**
	Chloroformi,	**f ʒ j**
	Etheris,	**f ℥ ss**

M. Sig: Use as directed.

The first prescription is one that you can use for obtunding sensitive dentine. It is not a panacæ for all ills. It will not completely de-sensitize all dentine, but in large cavities where there is an extensive area involved, and where the dentine is extremely sensitive, you can take a little pellet of cotton and place it, saturated with this liquid, in the cavity, after the rubber dam is adjusted, and you will find by the time you are ready to excavate the dentine that these two extremely volatile liquids, ether and chloroform, have volatilized. The value of this remedy depends largely upon the volatilization of these fluids. No solid can turn to a liquid, and no liquid to a gas unless it does it according to a certain law in physics by extracting a certain amount of heat. As these two liquids are volatilized there is abstracted from the tooth structures a certain amount of heat, and that volatilization drives the menthol into the decayed dentine. You can not remove the decay painlessly in all instances, but you will be surprised to find at times how painlessly you can remove it after you use this remedy.—*Dental Review.*

POINT OF APPROACH FOR PULP DEVITALIZATION.

Dr. G. H. Kittle, McPherson. Kan.

Where it is necessary to amputate a sound tooth as an abutment for a bridge, to approach this pulp in the most painless manner we should approach it at the cervical margin where the enamel is very thin, and there seems to be a lack of sensitiveness of the dentine at that point. In a large majority of cases where I have tried it, I found I could bore from the outside into absolute contact with the pulp before any pain was manifested. Then, after we have access to the pulp, it is an easy matter to devitalize, by having everything ready beforehand, having sharp instruments. I have been able in four minutes' time to expose and remove the pulp of a sound tooth, which I desired to grind for an abutment, with practically no pain, or such a slight amount as not to be worth mentioning.—*Western Dental Journal.*

MISTAKE IMPOSSIBLE.

Under certain circumstances a patient's anterior teeeth, or, perhaps, their roots, need to be extracted and an artificial substitute made. It is very desirable to, as far as possible, restore the exact contour of the features about the mouth. But afer the teeth have been extracted it is not always easy to remember the former fullness of the lips. To make an exact reproduction of the features possible, take a small facial impression in plaster. All that is necessary, is from the chin to the nose, and far enough towards the ear to include any area of change. When the restoration is being made the impression may be placed upon the face and the lips filled out to it with wax. There can be no mistake or misunderstanding between the patient or her friends, and the dentist as to the former position of the lips.—*Dominion Dental Journal.*

THE USE OF ADRENALIN CHLORIDE INADVISABLE.

E. T. Toeffler.

Inasmuch as cocain produces its characteristic effects by paralyzing the nerve-endings, the less constriction there is produced in the blood vessels the better. Because the reaction depends very largely upon the amount of disturbance there has been produced in the blood supply. For this reason I cannot see what particular advantage would be gained in the end by using a special astringent, such as adrenalin chloride. So powerful an astringent as this makes a bloodless operation a possibility, but it also greatly increases the dangers from secondary hemorrhage and not infrequently other serious complications. Two cases, at least, that I have in mind, both operations upon the nose and in which a combination of cocain and adrenalin chloride were used, have clearly demonstrated to my mind at any rate that there is more truth than fiction in the above statement. In the one case there was an unusual amount of rouble froc secondary hemorrhage. In the other, erysipelas was the complication, brought about, undoubtedly, through the profound debility produced in the tissue cells, thus rendering the parts more susceptible to infection.—*Dental Register.*

REPAIRING FRACTURED CASTS.

S. M. Weeks.

A valuable method of repairing fractured plaster casts may be found in the use of celluloid dissolved in camphor and ether to a creamy consistency. A good quality of celluloid should be selected, and to it should be added a mixture of equal parts of ether and spirits of camphor. This combination dissolves celluloid rapidly, and should be added to the material until a solution of a creamy consistency is obtained. The preparation should be kept tightly corked to avoid its evaporation.

When it becomes desirable to repair broken casts, the fragments to be attached should be well dried and both surfaces should be freed from broken particles. The surfaces should be coated with the celluloid solution, and after being pressed firmly, should be allowed to dry.—*International Dental Journal.*

EDITORIAL

THE PRINCE AND THE DENTIST.

A dentist in New York City has set society's tongue to wagging and the press to commenting about a bill of $1,000. for dental services rendered Prince Louis of Battenburg a few weeks ago.

According to newspaper reports this dentist filled three teeth with gold and supplied one porcelain crown for the prince, employing about twelve hours' time in performimng the operations. The prince was satisfied but American friends contended that the charge was exhorbitant and suggested that the dentist be asked for an itemized bill.

These men viewed the fee from a standpoint of time consumed rather than for skilled services regardless of time; so much per hour, as demanded by laborers and mechanics, instead of so much for the knowing how and possessing requisite skill to operate successfully after the manner of the skilled surgeon. And then, from this standpoint, to think of the absurdity of these men supposing that that dentist could spend an additional hour or so making a detailed statement of the operations without making an additional charge for the time consumed in doing so, especially when his time was, according to their estimate, valued at $83.33 per hour.

Now possibly it was to save the prince this additional expense that the dentist preferred to let his former bill, "For professional services rendered," suffice. Dentists are not bad fellows though they may show their consideration in different ways. Then, an itemized dental bill, or surgeon's bill, might not look just right sometimes, especially to the patient. And again it might be detrimental to the patient's health by causing shock or collapse, and this would be indeed a calamity especially if it occurred before the dentist received his pay.

Imagine the shock Prince Louis might have suffered had this New York dentist presented an itemized bill with charges for "time" rather than for "skill" and which of necessity would have to have been somewhat as follows:

Receiving His Royal Highness and getting him comfortably seated in dental chair, time consumed ten minutes at $1.40 per	$14.00
A shy at the weather, time consumed one and a half minutes	2.10
Picking up mouth-mirror and wiping same (one minute)	1.40
Examining mouth and teeth (eight and a half minutes)	11.90
Allowing prince to sneeze (four times) one and a half minutes more	2.10
Picking up pellet of cotton and wiping out carious cavity (half minute)	.70
Exploring decayed surface of tooth (one minute, dentist's estimate)	1.40
Allowing prince time to groan (also dentist's estimate) three minutes	4.20
Placing obtundent in cavity (two minutes)	2.80
Allowing prince to expectorate (one minute)	1.40
Privilege of being entertained by office girl while dentist answered telephone call (five minutes)	7.00
Adjustment of rubber dam (five minutes)	7.00
Other dams (two minutes, dentist's estimate)	2.80
Obtunding, burring, excavating and chiselling for cavity preparation (one-half hour)	41.67
Incoherent exclammations under dam (five minutes. Also dentist's estimate)	7.00
Building, filling, condensing gold, finishing and polishing plug (the filling, not hat) one and three-fourth's hours	145.83
Removing dam and allowing prince to expectorate (three minutes)	4.20
Time consumed by prince in attempting to get his distorted features back to normal (five minutes)	7.20
Total for the first sitting (one filling)	$264.70

Somehow an itemized dental bill don't look just right, particularly one based on "time." But the dentist is often censured if he don't give one itemized, and is heralded as a robber if he does. His critics would make him out to be a grafter, charging for that which often costs him nothing, for the dental dealers "give him time," and his grocer and other merchants. (sometimes).

He cannot even put into practice, without being criticised, a motto, (modified) he has taken from Emerson's Essay, on

Compensation, and which is applicable to the patient: "Beware of too much good (money) staying in your hand. It will fast corrupt and worm worms. Pay it away quickly in some sort." Then, when he tries to save that patient a possible corruption by asking a share of the "filthy lucre," he is himself condemned and not allowed to become a benefactor.

Some aristocrats willingly pay a caterer as much as a thousand dollars for a champagne dinner, and he furnishes a filling that is not only conducive to early decay but remains in the stomach not more than five hours and in the head not more than five days, but when the dentist charges that amount for several fillings that are conducive to longevity, (of the teeth) and that will remain for years, he is branded a "skinner." But this is the public's view of the case here cited. Before passing judgment we should know both sides. Perhaps this dentist had some accumulated laundry bills to settle; or had entertained a few of the 400 the night previous; or had dental depot or other honest debts full due; or perhaps had in mind some little entertainment for his Royal patient and really needed the money. But as to whether this dentist was justified in charging the amount he did, we shall not presume to decide. The whole affair was left in the hands of the British Consul General to settle, which he did by paying (without exacting an itemized bill) the amount charged for the work which he said was "special" and of a highly skilled character. He said the prince was pleased and that he was pleased. So if the prince was pleased, and the Consul General was pleased, and even the dentist himself was pleased, surely the rest of the people ought to be satisfied.

NEW PUBLICATIONS

LONG'S DENTAL MATERIA MEDICA AND THERAPEUTICS. A Text-book of Dental Materia Medica, Therapeutics and Prescription Writing. For Students and Practitioners of Dentistry. By ELI H. LONG, M.D., Professor of Materia Medica and Therapeutics in the Dental and Medical Departments of the University of Buffalo, New York. In one octavo volume of 298 pages with 7 engravings and 18 colored diagrams. Cloth, $3.00 *net*. Lea Brothers & Co., Publishers, Philadelphia and New York, 1905.

This new second edition, just issued, has been thoroughly revised in accordance with the latest U. S. Pharmacopoeia and the book has been enlarged about one-fifth of the original text.

The author's intention has been to supply a book on this subject directly applicable to the needs of students and practitioners and to save them from the labor of selecting and adapting it from general medical works. The text in general is well presented, among the useful features being a good tabulated index of drugs and a full chapter on prescription writing. The book is being received with favor and is a useful addition to the literature on this subject.

THE DENTIST'S MAGAZINE.

The Dentist's Magazine is the name of a new dental journal that made its appearance in December. It is to be a monthly publication with the Cogswell Dental Supply Company, Cleveland, Ohio, as publishers. It has four editors, each in charge of a special department. Dr. W. T. Jackman edits the department of operative dentistry; Dr. George H. Wilson, prosthetic dentistry; Dr. W. G. Ebersole, humanitarian dentistry; and Dr. Varney E. Barnes, orthodontia. With men so capable on the editorial staff we predict a successful future for the publication. The first number contains both original and selected articles of value to all dentists. The text is presented in an attractive style and the paper and press work are of the best. We wish the new journal and its editors success.

SOCIETY

DENTAL EXHIBIT.

On March 27, 28, 29, 30, 1906, there will be held at The Auditorium, Chicago, the largest exhibit of dental goods and appliances ever attempted. There will be no papers, but experts in every line will give continuous demonstrations. No admission fees or dues. This is an exhibit by manufacturers for the dentist and all are invited to be present. Particulars in the advertising pages.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners for examination of candidates for license to practice dentistry in Wisconsin will be held in Milwaukee, January 29, 1906, at the Hotel Pfister.

Application must be made to the secretary fifteen days before examination. The candidate must be a graduate of a reputable dental college, or have been engaged in the reputable practice of dentistry consecutively for four years, or an apprentice to a dentist engaged in the reputable practice of dentistry, for five years. For further particulars apply to

J. J. Wright, *Secretary,*
1218 Wells Bldg., Milwaukee, Wis.

G. V. BLACK DENTAL CLUB CLINIC.

The G. V. Black Dental Club, (Inc.) of St. Paul, Minnesota, will hold a mid-winter clinic in St. Paul, Minn., on February 22-23, 1906.

All practitioners are most cordially invited to be present. An interesting program is being arranged. For further information address.

R. B. Wilson, *Secretary,*
107 E. 6th. St.,
St. Paul, Minn.

AFTERMATH

PERSONAL AND MISCELLANY.

Married.—Dr. Frank W. Brandon, of Pittsfield, Mass., and Miss Louise Engel, of Hartford, Conn., November 16th. Dr. A. W. Phillips, Seattle, Wash., and Miss Nellie Nelson, of Portland, Ore., were married December 4th.

Fires.—The office of Dr. Charles Richey, of York, Pa., was damaged by fire December 2d. Loss not estimated. The office of Dr. Hurst, of Alden, Ia., was slightly damaged by fire November 22d. It was fully covered by insurance.

St. Louis is to Have a Credit Guide.—A medical credit guide is to be issued in St. Louis, for the benefit of physicians, surgeons, dentists, and druggists, which will contain, it is said, the names of 75,000 persons in that city who are good for their bills and of 15,000 persons who are not.

Dr. C. C. Chittenden Dead.—As we go to press we learn of the death of Dr. C. C. Chittenden, of Madison, Wis., which occurred December, 15, 1905. The funeral was held December, 18th. in the Episcopal church at Madison. An obituary notice will appear later.—Ed.

Fined for Practicing Without a License.—J. E. Conger, of Shelton, Conn., who was arrested for practicing dentistry without a state license was fined $5 and costs and appealed his case. Dr. Conger declared he was practicing dentistry before 1893 when the license law was passed, but the evidence showed was not in business for himself.

Bursting Pyrozone Bottle Maimed Dentist.—The explosion of a bottle of Pyrozone in the hands of Dr. Edward Dare, of Trenton, Pa., may cost him the sight of one eye. He was attempting to open the bottle when the explosion occurred. The glass broke into a thousand pieces, cutting his hands and face in innumerable places and the pyrozone created great inflammation.

Which Could Serve the Public Best.—An undertaker and a dental surgeon are among the applicants for the position of State Librarian of New York. The undertaker might be useful in disposing of any dead literature that encumbers the library, but could the dentist help the patrons of the institute to cut their literary wisdom teeth.

Ordinance to License Dentists Voted Down.— At the monthly meeting of the Wetumpka, Ala., City Council, December, 5th., the ordinance proposing to license beef dealers, liverystable men, doctors, dentists, lawyers and many other business men, was killed. This ordinance has been under consideration for some time and has caused a vast deal of discussion among all classes of citizens.

Society of Dentists Incorporated.—The Odontotechnique Society of Newark, N. J., have filed articles of incorporation. The object of the organization is to further the science of dentistry and to endeavor to sustain the professional character of its members. The officers are: President, R. B. Van Giesen, of Montclair; vice-president, Joseph P. P. Knef; secretary and treasurer, J. S. Voegtlen. The society will meet the first Thursday of each month.

Ohio State Dental Society.—Officers elected for ensuing year are: H. L. Ambler, Cleveland, President; H. C. Brown, Columbus, 1st. vice-president; C. I. Keely, Hamilton, 2d. vice-president; F. R. Chapman, Columbus, secretary; W. A. Price, Cleveland, treasurer; Directors to serve three years: L. P. Bethel, Columbus; Henry Barnes, Cleveland; J. R. Callahan, Cincinnati; W. T. McLean, Cincinnati.

Claims Dental Law is Void.—In habeas corpus proceedings before Judge Dibell, of Joliet, Ill., Dr. Charles H. Kettles, a dentist, declared through his attorney that the section of the state dental law providing for the punishment of violators was of no effect, as no imprisonment penalty is provided. Kettles was fined $800 on charges of practicing dentistry without a license. He refused to pay.

Dentist a Bankrupt.—W. E. Walker, a dentist of Chatham, N. J., has filed a petition in bankruptcy in the United States District Court, New York city, with liabilities of $2,484 and no assets. He owes for dental supplies, $934; beer, ale and whiskey, $410; cigars, $207; clams, $108; jewelry, $132; furniture, $125, and feed $60. He made an assignment on March 31, 1905 but he had no assets then.

Dentist is Shot by Father-in-law.—Dr. E. N. Hilborn, of Oklahoma City, was fatally shot by his father-in-law, P. O. Sullivan, December 6th. The coroner's inquest resulted in Sullivan's discharge as the deceased had been addicted to the use of cocain. and he also asserted that had it not been for the shock from the pistol shots, Hilborn would have died before morning from the drug. Dr. Hilborn had demanded money from Sullivan and had threatened to kill him if he refused.

New Bill Aims at Debtors.—A bill providing for the discharge of civil service employes who fail to pay debts contracted for groceries, clothing, rent, or the services of dentists, physicians, or undertakers, has been introduced by Representative Dixon of Montana. After a government employe has refused three times to pay a bill he is to be suspended, and if he fails to pay in three months is to be stricken from the rolls. The bill applies only to debts contracted while in government employ, and provides that civil service employes shall not plead the statute of limitations.

Deaths.—Dr. F. E. Howe, of Ithaca, N. Y., died November 19th; age 50 years. Dr. O. C. Watkins, of Eaton, O., died November 19th. of Brights' disease; age 45 years. Dr. Michael Connor, of Brooklyn, N. Y., died November 20th. of conjestion of the liver; age 60 years. Dr. E. T. Breeding, of Glasgow, Ky., died November 22d. of concussion of the brain caused from a fall; age 27 years. Dr. T. O. Bramlett, of Atlanta, Ga., died November 14th. of congestion of the brain. Dr. James S. Scott, of New York, N. Y., died November 14th; age 47 years. Dr. Myer A. Carman, of Plainfield, N. J., died November 18th. of heart disease; age 64 years. Dr. J. J. Bodwell, Winamac, Ind., shot himself December 11th; age 45 years.

The Evans Dental Museum.—The Trustees having charge of the Thomas W. Evans Dental Museum and Institute held an executive session in the office of the Mayor November, 20. It was reported that the property comprising the estate located in France had not yet been disposed of, but that litigation connected with the same had almost terminated. The work of establishing the Dental Museum and the Institute on the old Evans homestead, on Spruce street, West Philadelphia, will not be commenced until the affairs of the estate have been settled. It is estimated that there will be between $2,000,000 and $3,000,000 for the establishment and maintenance of the institution.

Died—Dr. W. N. Wilson.—Dr. Wm. N. Wilson of Indianapolis, formerly of Richmond, Ind., was killed October 14, by the explosion of a milk stearlizer in this city. For many years Dr. Wilson practiced dentistry at Richmond, Ind. He gave up practicing dentistry and came to Indianapolis where he engaged in the dental supply business, later becoming an instructor in the Indiana Dental College which position he held until 1902 when he engaged in the condensed milk business. Dr. Wilson was a highly esteemed member of the Friends Church, being a very active participant in the affairs of the church and Sunday school, particularly in the latter. A wife, two sons and one daughter survive him. He was 52 years old.

Dr. Smyser Convicted of Forgery.—Convicted of forging and selling dental certificates, admitting incompetent students to practice, Dr. Jacob H. Smyser, of Chicago, Ill., was sentenced by Judge Smyth to pay a $300 fine and to the penitentiary under the indeterminate act, December 8th.

Dr. Smyser was secretary of the state board of dental examiners under Gov. Tanner, and used his office, according to the evidence, to defraud the state. He was assisted by Edward Flynn, who was formerly an investigator, employed by the dental board, who also was sentenced to the penitentiary and to pay a $300 fine. The two men were indicted in 1901 for conspiracy to defraud the state, a year after Dr. Smyser had resigned from the board. The discovery was made that a large number of dental students, who had not spent the requisite number of years at a dental college, were securing certificates. Several of the incompetent students located in Germany. Their incompetency attracted the attention of that government and complaint was made to the Illinois authorities against sending the products of "diploma mills" there.

The Ohio Dental Law is Constitutional.—On December 5, 1905, the Supreme Court of Ohio rendered an opinion affirming the decision of the lower Courts in the case of Elsworth Glenn vs. State of Ohio, in which the constitutionality of the Dental Law of Ohio was attacked. Briefly, the history of the case is as follows: About the middle of November, 1902, Ellsworth Glenn, of Columbus, was notified by Secretary of the Board that he was violating the Ohio Dental Law, and must cease. Glenn's defiant attitude developed a few days later when he received a second notice, as he practically invited prosecution. The Secretary secured evidence and appeared before the Franklin County Grand Jury and an indictment was duly returned. Then Glenn, through his attorney, filed with Board an application demanding that he be licensed without examination, under provision of former law which was repealed by passage of present law; this the Board rejected and in turn Glenn begun mandamus proceedings to compel Board to issue license, but the decision was against him and he was later affirmed by Circuit Court. The criminal case, under the indictment, was pushed following the decision of lower Court in mandamus case, and the jury found Glenn guilty; a motion for a new trial was overruled, an appeal to Circuit Court affirmed judgment of Common Pleas Court and later an appeal to Supreme Court resulted in that Court affirming the judgment of lower Courts, thus establishing the constitutionality of the Ohio Dental Law.

False Teeth Declared a Disaster to the Aged.—A recent lecturer on hygiene declares that nature so constituted us that, when the mouth lost its teeth, the stomach lost its power to digest properly anything that could not be masticated by the gums. Hence false teeth are disaster to the aged. A convert to this view sings, in the Pall Mall Gazette:

Nature, when she made our frame,
Knew quite well her little game;
And the Grand Old Nurse intended
That our gums be undefended
When, at three-score years and ten,
We were getting oldish men.

When our gums are free from teeth,
'Tis a sign of things beneath:
Only what our gums can chew
Is the food for me and you.
Pap, I'm sure, beyond all question's
Best for elderly digestions.

Soft and sweet should be our forage,
Nothing harder much than porridge
Milk our normal liquid diet,
(Whiskey, p'raps, upon the quiet);
Butter, bread, an egg or two,
And, at Christmas time, a stew.

But the dentists, wicked men,
When we get to three-score-ten
Offer rows of ivory teeth
Gleaming from their crimson sheath:
How men fall before the bait;
Then repent—alas! too late.

THE DENTAL SUMMARY

A JOURNAL OF PRACTICAL DENTISTRY

Vol. XXVI FEBRUARY, 1906 No. 2

L. P. BETHEL, M. D., D. D. S.
EDITOR

PUBLISHED BY
THE RANSOM & RANDOLPH CO.
TOLEDO, OHIO

ENTERED AT POSTOFFICE AT TOLEDO AS SECOND-CLASS MATTER

Contents

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS. Page

Some Cavity Preparations for Porcelain Inlays *H. C. Kenyon* 73
Impressions and Impression Materials *H. A. Shannon* 78

REGULAR CONTRIBUTIONS.

The Farce in Sterilization *W. D. Miller* 80
A Method of Manipulating a Positive Matrix for Inlay Work *F. S. Morrison* 83
A Method of Making a Gold Inlay *Henry Barnes* 84
The Much-Abused All-Metal Shell *Clarence J. Grieves* 85
A Method of Making Inlay to Restore Corner of Central or Lateral *A. C. Greenlee* 92
Swaging with Moldine, Both the Matrix for Gold Inlay and Backing for Facings *J. K. Douglas* 92
A Method of Obtaining Pressure in the Construction of Porcelain Crowns *C. S. Starkweather* 92
The Extraction of the Teeth Under Prolonged Anaesthesia with Nitrous Oxide and Oxygen Administered Through the Nose *Charles K. Teter* 93
"The Personal Equation" *J. D. Patterson* 94
High-Pressure Anesthesia as Compared with Cataphoresis and Nitrous Oxide and Oxygen *D. H. Ziegler* 107
The Movement of the Jaws in the Mastication of Food *A. O. Hunt* 116
Porcelain Inlay Work *Edward Eggleston* 125

SUGGESTIONS.

To Make a Simple Cavity for Porcelain Inlay *Joseph Head* 127
To Roughen the Surface of a Solid Gold Inlay *G. S. Hershey* 127
Undercutting for Inlay *M. L. Rhein* 128
Pyorrhea Alveolaris Treatment *Robert Good* 128
To Obtain a Roughened Surface for Porcelain Inlay *M. D. Littig* 129
To Prevent Warpage of Plates 129
The Use of Richmond Metal *J. P. Root* 129
A Simple and Practical Porcelain Crown for Molars *Ned A. Stanley* 130
A Hint on Cavity Preparation for Inlays *C. S. Hardy* 130
Rules for the Use of Amalgam *J. D. Patterson* 131
Fusing of Porcelain Bridges *J. E. Nyman* 131
The Fusing of Porcelain Bridges *J. D. White* 132
Mounting of Porcelain Bridges *Hart J. Goslee* 133
Stress on Inlays *M. L. Rhein* 133
Restoration of a Broken Incisor Tip *Walter S. Waterbury* 134

EDITORIAL.

Retrogression or Advancement—Which? 135
Dental Surgeons for Army and Navy—New Legislation 137

CORRESPONDENCE.

New Army and Navy Legislation 139

OBITUARY.

Dr. Charles C. Chittenden 144
Dr. William Van Hon 144

SOCIETY.

Dental Exhibit 146
The G. V. Black Club Clinic 146
AFTERMATH. 147

To Correspondents Send communications, exchanges, books for review, etc., intended for the Editor DENTAL SUMMARY, to DR. L. P. BETHEL, 1255 Neil Ave., Columbus, Ohio.
Subscriptions and advertisements, send to the publishers,
The Ransom & Randolph Co., Toledo, Ohio

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

SOME CAVITY PREPARATIONS FOR PORCELAIN INLAYS.

BY H. C. KENYON, D.D.S., CLEVELAND, OHIO.

Professor of Operative Technics and Dental Anatomy,
Western Reserve University.

It is not my purpose to deliver an ultimatum on cavity preparation for porcelain inlays, nor do I wish to claim perfection or originality in the forms described in this paper. There is a wide latitude of opinion upon the subject, and there may undoubtedly be a considerable degree of latitude for variations of practice as applied to the preparation of any given cavity. I merely wish to present some thoughts upon the subject which are the results of several years of study, comparison, teaching, and clinical experience. Since I began the use of porcelain for filling teeth I have had very few inlays to replace or recement. The percentage of failures has been lower than with some other filling materials in common use, for which I am duly grateful. I have no reason to believe that I possess any more skill as a porcelain operator than the average dentist; and I feel certain that with as much care in the preparation of cavities with regard to the forces to be resisted, any average operator may expect an equal or greater degree of success, especially if he exercises a proper degree of conservatism in the selection of cases. It is the indiscriminate use of porcelain, or any other material, that brings it into disrepute.

It has invariably been my experience that it is impossible to teach definite forms satisfactorily by oral or written instruction alone. The accompanying illustrations are made from photographs of cavities cut in plaster models three times the dimensions of average teeth, which were exhibited at a clinic at the Ohio State Dental Society in December.

They are not as definite as I should like but possibly will serve their purpose. It may be objected that these are ideal cavities that are not usually found in practice; however, the principles illustrated in the preparation of these cavities may be applied to all cavities in the same classes.

There are certain facts relative to cavity preparation which I believe are agreed upon by most of the practical porcelain operators as having been taught them by clinical experience. Among these may be enumerated the following:

Cavo-surfaces or margin angles should be as nearly as possible right angles, to insure the greatest edge strength and the least interference with color by reason of absorption and reflection of light.

The cement has not yet been made which will anchor an inlay against intermittent or continued stress; hence,

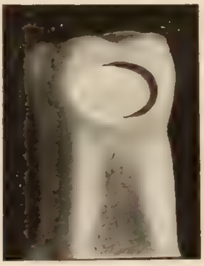


Fig. 1.

Resistance-form, retention-form, and convenience-form must each be attained in cavities whose fillings will have to bear any of the stress of occlusion during mastication.

There is no place in porcelain practice for so-called saucer-shaped cavities.

Fig. 1 represents the correct preparation for the class of cavities occurring on the buccal surfaces of molars and bicuspids and the labial surfaces of incisors and cuspids. The marginal outline of the individual cavity will be determined by the same considerations that determine the outlines of cavities usually. The marginal outline may vary greatly in different cavities and in different teeth but the internal cavity form will be similar in all such cavities. The form is very simple and consists in having the occlusal, gingival, mesial, and distal walls cut on straight lines from the enamel margin to the axial wall and always meeting the axial wall at an angle that is slightly greater than a right angle. This produces a cavity whose walls form very nearly right angles with the convex enamel surface, and whose diameter in any direction at the enamel margins is a little greater than that of the axial wall taken in the same direction. This will allow the matrix to be easily withdrawn without distortion and will give the porcelain the best form of margin both for strength and noninterference with color. In small cavities of this class the axial wall may be flat, but in those that include large areas of tooth surface this wall should be convex to avoid coming into too close proximity to the pulp as might happen in cutting straight across the natural convexity of the tooth to form a flat wall. Fillings in cavities of this class are not required to resist a great amount of stress and this preparation supplies sufficient retention to meet the needs in that regard when the inlay is cemented in place. While the illustration shows such a cavity in a molar, the same principles of preparation are applied in the bicuspids and incisors, any difference being represented in the variation in marginal outline.

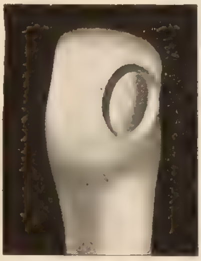


Fig. 2—a

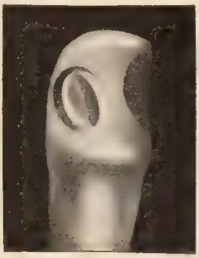


Fig. 2—b

Fig. 2 shows two ways of preparing simple proximal cavities in incisors and cuspids. One of them, marked *"a"*, shows the cavity cut to open upon the labial side, while the other one, marked *"b"*, shows the preparation from the lingual side. The main points in which these cavities differ from the last one are that the location of the cavity margins is influenced by a different environment and the question of separation of the teeth and the extension of the cavity for convenience is involved.

When the cavity is opened from the labial side the lingual margin must be cut to a point sufficiently near the lingual edge of the proximal surface upon which it occurs to place the margin on the lingual side of and free from the immediate region of the contact point; and likewise when the cavity is opened from the lingual side the labial wall must be so placed as to be free from and to the labial side of the contact point. I am well aware that there are some enthusiastic advocates of the indiscriminate use of porcelain who disregard many of the principles involved in those precautionary measures practiced by conservative dental surgeons to prevent the recurrence of caries at cavity margins. However I have yet to hear one of them state a scientific reason for omitting any of those precautions in porcelain operations, and my personal beliefs and clinical experience prompt me to apply them very much the same as when preparing cavities for metal fillings. The gingival, incisal, mesial or distal, and labial or lingual walls should be cut on straight lines from the enamel margins to the axial wall and meet this wall at an angle that is a little greater than a right angle.

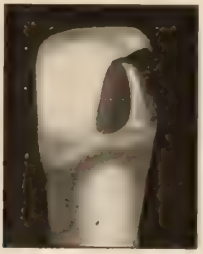


Fig. 3.

Fig. 3 shows a form that may be applied to the larger proximal cavities which do not include the incisal angle of the tooth. In cavities of such extent there will be in many mouths a decided stress brought to bear upon the fillings in the process of mastication by the occlusion of the lower incisors against the lingual surfaces of the upper incisors, with a tendency to force the filling out of the cavity in the labial direction. The writer therefore believes that such cavities should be opened at the lingual side of the interproximate space. This will make it possible to cut a definite labial wall which meets the axial wall at an angle as shown in the illustration, which, combined with the flat gingival wall, will serve as a seat to effectually resist the stress of occlusion. The gingival wall may meet the axial wall at an angle that is less than a right angle giving a retentive form to that part of the cavity. There is no lingual wall in this cavity, the axial wall being cut straight out to the lingual surface of the tooth. It is of importance that the angle formed by this wall and the lingual enamel surface should be as nearly as possible a right angle as there is danger of the porcelain or the enamel chipping if either is left with a sharp edge. Much more might be said of this cavity but a careful examination of the illustration by the reader will probably do as well.

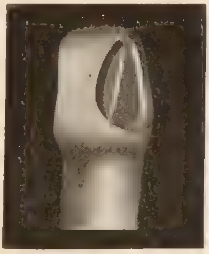


Fig. 4.

The form just described may often be applied to those larger proximal cavities which are extended to include the incisal angle of the tooth. However, unless the inlay will, by reason of the arrangement of the teeth in any particular case, be protected from the stress of direct occlusion the writer believes the form of cavity shown in Fig. 4 will be safer to depend upon. There is a step cut in the lingual side of the axial wall and when possible one near the labial side formed by the meeting of the labial and axial walls at a right angle and completed by the labial enamel bevel. The gingival wall and the gingival third of the labial wall should meet the axial wall at an acute angle. This will produce a slight pocket or recess at the labiogingival angle of the cavity which will assist greatly in the retention of the inlay and will not in the least interfere with the removal of the matrix or the insertion of the inlay. The anchorage of fillings, either porcelain or metal, in cavities of this class is one of the most perplexing the operator has to solve and he should avail himself in each case of every possible opportunity to cut flat surfaces in plains which shall be at right angles to the usual lines of stress.

These descriptions apply to the cavities as prepared ready to burnish the matrix. Slight undercuts for the better retention of the cement may be made in some of them after the inlay is baked if the operator chooses.

IMPRESSIONS AND IMPRESSION MATERIALS.

BY H. A. SHANNON, D. D. S., LINCOLN, NEBRASKA.

Professor of Prosthetic Dentistry, Lincoln Dental College.

This is a subject that has been written on and discussed before dental societies so much that it has come to take a place second to some of the other steps in making of a plate. It is not with the object in view of giving to the entire dental profession something new that I write this article, but rather in hopes that it may be a means of helping some to secure better results in some cases where they have failed to satisfy themselves and the patient.

The conditions of the tissue to be reproduced in the model, vary as greatly as do the patients themselves. Knowing this, how absurd it is for us to make the statement that there is only one first class impression material for dental use. If the object in view is to secure an impression of the tissue without depressing any of it, then there is only one to use, but in what percent of the cases met is this true? When a plate is put in place it is not for looks alone, but is intended to give to the patient something of far more value. During the process of mastication the force applied is in some cases surprising; it is claimed to vary from 50 to 200 pounds and in some cases to exceed this amount. Knowing this, it is clear to us why we should have the plate resting on a base that will change form as little as is possible. To accomplish this result it is necessary, in some instances, to displace the soft tissue to a considerable extent. If this is not done there will be a rocking of the plate and consequently a breaking of the adhesion of the plate.

A method that has proven perhaps more satisfactory in a larger number of cases than any other in my hands is the one which I shall describe. It is not the simple fact that the impression is taken with compound and plaster, but the following out of the method in detail from start to finish:

The impression tray is fitted to the mouth leaving a space between the border and the tissue of from one-eight to three-sixteenths of an inch. See that the edge does not infringe on the muscles but that they may be drawn down to their fullest extent without any interference from the tray. Warm compound and take an impression in the usual way. After cooling sufficiently to prevent change of form in removing, remove and with a sharp knife trim off the excess material that has been forced beyond the edges of the tray. The knife must be kept in a vertical or right angle position to the plane of the tray. Warm, by means of dry heat, that portion which will come in contact with the cheeks and lip. Reinsert impression material and hold with firm pressure and instruct the patient to displace the impression by pressing downward with the muscles of the cheeks and lip. Again cool and remove. Then by means of dry heat soften that portion across the heel of the tray and insert, pressing firmly to place and holding with one hand while with the other you press the softened material across the heel firmly against the tissue and continue to hold and press until the compound is cooled then remove. Mix plaster to a soft, thin state and place perhaps a teaspoonful in the compound impression distributing it over the surface to come in contact with the tissue and re-insert and press firmly home, holding until the plaster has set. The outline of this impression should mark the outline of the plate, especially on the buccal and lingual edges. This can be accomplished by allowing the plaster to run over the sides of the impression while pouring the model so there will be a groove on the model to form the edge of the plate.

REGULAR CONTRIBUTIONS

THE FARCE IN STERILIZATION.

BY W. D. MILLER, M. D., D. D. S., PH. D., SC. D., BERLIN, GERMANY.

A communication appeared under the above title in the October number of THE DENTAL SUMMARY from the pen of Dr. Edgar A. Kinsman, of Cambridge, Mass., which, it seems to me, may exert a harmful influence just at a point where such influence is particularly undesirable. The author starts out with the assertion that if the old adage "cleanliness is next to godliness" be true, it is equally true that many dentists of the present day are very far away from "Godliness," and while recognizing this fact, he in a way protests against what has been done and is being done to remedy the evil; and the general tendency of the article, as reflected in its title, may, I fear, serve only to make the Godly less Godly and the Godless more Godless.

It is a fact universally recognized and against which it would be absolutely vain to protest, that the surgery of today accomplishes successes of which that of 30 years ago never dreamed; it is equally true that these successes are due to the present strictly antiseptic methods of operation.

The question which interests us is: To what extent can and should these methods be applied in the practice of dentistry.

We may put it down in the first place, that the dentist should always approach his patients with clean hands. They should be thoroughly cleansed with brush and soap before beginning work in the morning, as well as between operations and where mouths showing symptoms of specific diseases(syphilis, tuberculosis, etc.,) have been treated the hands should be sterilized according to the strictest rules demanded by modern surgery before being put into the mouth of the following patient. The man who neglects these precautions is guilty of gross carelessness and cannot be too severely condemned. Dr. K. will undoubtedly agree with me in this. Enough of cases of communication of syphilis by dental operations have been reported to make observance of this precaution absolutely imperative.

Whether the hands have been disinfected, or only thoroughly washed, as under ordinary circumstances, there is no excuse for unnecessarily soiling them by handling infected objects during the operation (putting the hands in the pockets, scratching head or nose etc.,) and the knobs of the drawers as well as the adjusting parts of the chair may certainly be kept in a fairly clean condition.

It is true that our work is mostly done on the hard tissue of the teeth which is not subject to direct infection (although no one should attempt to excuse himself on that account for putting a dirty burr to a tooth) nevertheless we perform few operations in which we do not cause wounds of the gums and in some operations such wounds are very extensive. Fortunately the gums possess a very remarkable degree of resistance to infectious agents, otherwise we would meet with disastrous results much more frequently. It is also true that it is not possible for us to sterilize the mouth and we consequently cannot always operate aseptically in the mouth. We all know that; no more can we absolutely free our drinking water from germs by filtering it, but an immense amount of good is done by filtering nevertheless and if we have to perform a bloody operation in a dirty mouth that mouth should be cleansed i. e. freed of the great majority of its infectious material and germs before operating. We also all agree that it is next to impossible for us to keep our hands and instruments perfectly aseptic during our operations but this would be a very poor excuse for an unclean operator. On the same principle we need never wash or bathe because we don't stay clean. It makes a very great difference whether we carry a few or many bacteria on our hands or instruments and it should be our endeavor to keep the number down as much as possible.

The cardinal points of the whole matter is this: *we must not convey pathogenic bacteria from one mouth to another.* It is perfectly well known that this law has been sinned against very grievously in the past and is still being sinned against. This is proved by the considerable number of infections which have been reported following dental operations. Kohler observed in two years 22 cases of periostitis accompanied by acute gangrene following upon careless extractions and I have been consulted about more than that many cases of gangrene of the gums sometimes extending upon the mucous membrane of the cheek following upon slovenly scaling of the teeth. The dental profession was formerly altogether too wreckless in this matter but thanks to the protestations of a few of its members a great reform has taken place but still in Kinsman's words many dentists today are still far from Godliness and just this class will find an excuse for its remissness in such articles as that of Dr. K. I imagine however that Dr. K practises better than he preaches because after preaching against what he styles the farce of sterilization he winds up by saying that it is sufficient to boil our instruments in a solution of soda. Certainly it is, we ask for nothing better than that, nor could we have anything better. Regarding napkins and rubber dam he is less explicit: "they must be clean." That is not enough. If they have been used in the mouth they must be boiled before using for another patient. Better still, the same piece of rubber dam should not be used for two different patients. Personally I would not permit any dentist to put a piece of rubber dam which had been soaked for an hour or more in the buccal secretions of some unknown person into my mouth, unless it had been boiled for at least ¼ hour and then I would much prefer a new piece and willingly pay ten times the price of it if necessary. It is not my design however to enter into a closer discussion of the question of asepsis in dentistry, but only to enter a mild protest against the Title of the article as well as against a certain tendency which it seems to me to have. The author is convinced that asepsis is "in many cases overdone and in a decidedly greater number underdone," yet I doubt if any one who reads the article will be incited to greater precautions. The overdoers (if there be such) may relax their vigilance, the underdoers will be very contended to find that they are all right as they are, whereas as a matter of fact the profession as a whole still falls considerably short of having arrived at the desired point. The difficulties of keeping things in an approximately sterile condition have been somewhat exaggerated by Dr. K.

American dentists practising in Europe as well as many German dentists employ a young lady whose duty it is to usher in and out the patients, make the appointments, prepare the filling materials, sterilize the instruments and keep them in order, help in adjusting the rubber dam and to be useful in a hundred ways. I am not exaggerating when I say that with such help a man can accomplish one third more in a day and accomplish his whole work with more ease and comfort to himself and his patients, and no dentist in his own interest and in that of his patients should be without it. In this way furthermore the problem of asepsis in dentistry is made comparatively simple.

A METHOD OF MANIPULATING A POSITIVE MATRIX FOR INLAY WORK.*

BY F. S. MORRISON, D. D. S., MARTIN'S FERRY, OHIO.

In describing what I have termed a method of manipulating a positive matrix for inlay work, I always prepare the cavity in such a manner that an impression can be taken that will readily draw. From the impression taken in modeling composition the matrix is first outlined over it in order that it may be readily introduced into the cavity without puncturing or warping, and with sufficient margins all around the border. With cotton pellets and burnishers I thoroughly form the matrix to cavity, removing all cotton I force the modeling compound impression, first taking the precaution to slightly oil it, into the cavity and over matrix and firmly swage by use of fingers or suitable appliances. Removing impression and matrix together I invest in a small platinum tray in three parts powdered silex to one of plaster mixed with water to a proper consistency. The investment is practically nonshrinkable, and will withstand the heat for any number of bakings required to complete the inlay. This method will give you a matrix that is in positive contact with all points of the cavity and eliminate direct handling of matrix with fingers or instruments up to the completed inlay.

---

*Given as a clinic before the Northern Ohio Dental Society, June, 1905.

* * *

A METHOD OF MAKING A GOLD INLAY*

BY DR. HENRY BARNES, CLEVELAND, OHIO.

Cavity must be prepared with sufficient draft to permit easy dislodgment of matrix.

Matrix must be made of 24-k. gold or 1-1000 platinum.

SHAPING OF MATRIX.

Cut material large enough to cover inside of cavity and allow good margins.

Place gold or platinum over cavity and roughly shape, using cotton on end of pine stick. Now have suitably shaped pine sticks to wipe matrix into every portion of cavity frequently annealing to prevent breaking of matrix. Remove matrix and flow into bottom, if gold, 22-k. solder; if platinum, 24-k. gold. Cut platinum wire 28-gauge, into short lengths, shape same into letter U, hold at curve with pliers and solder ends into bottom of matrix thus making a loop which may be grasped with pliers to remove matrix from cavity.

Now take Moss Fiber gold and pack into matrix in cavity as in filling, only not so condensed, to form desired. Remove matrix, invest and flow 22-k. gold which will sink into moss fiber and make a good solid surface. Polish inlay out of mouth.

Undercut cavity and cut grooves in inlay to grip cement.

Prepare cement, place in cavity, put in inlay, have patient bite on pine wood to force to place. Leave cement around inlay if compound and involving mesial or distal surfaces, until thoroughly set. When platinum matrix is used, 24-k. gold may be used throughout, making a very beautiful surface and quite free from pits.

---

*Given as a clinic before the Northern Ohio Dental Society, June, 1905.

THE MUCH-ABUSED ALL-METAL SHELL.*

BY DR. CLARENCE J. GRIEVES, BALTIMORE, MARYLAND.

Too much cannot be said for or against the all-metal shell as universally applied either in depreciation of its many glaring deficiencies in hygiene and appearance, or in appreciation of its many restorative and preventative values.

Rare as are sane discussions of any subject, they are even more inconclusive when the theme is the all-gold crown; sweeping condemnation by the one and universal application by the other with a total absence of intermediate truth, are all the data to be gleaned from our literature covering a period now of about twenty-five years.

We might multiply such discrepancies galore but it is hoped that the exclusion from this consideration of the all-metal shell applied anterior to the first bicuspid, as the writer excludes it from his practice as something unethical, and the classification of its application anteriorally as the unusual exception which proves the foregoing the best of rules, may clear the air and permit an unbiased and common sense review of the subject.

Lest he be misunderstood, the writer risks the charge of prolixity and of multiplicity of detail that he may bring before you a few "hackneyed" if often overlooked facts, and asks; What are the conditions demanding the use of the all-metal shell, the principles involved mechanically, surgically and therapeutically? With what success does it restore lost function, protect and conserve dental tissue? How much does it damage surrounding parts and disfigure, and have we any better device offering at present?

A multi-rooted tooth, with tortuous canals difficult to seal, situated where masticatory stress is heaviest, with its vulnerable and exposed third in a strongly carious environment, is the usual problem; operative dentistry will for a time delay the ravages of caries but ere long cavities coalesce and the operator feels that to find new anchorage and place a filling would be but to display the simple mechanical craft of the woodsman in wedge splitting a log, physical forces are eternally the same, thin walls soon give away to the ultimate destruction of the pulp and oftimes, under the best of skill, the entire organ.

---

*Read before the Virginia State Dental Society, Lynchburg, August, 1905.

Whether the pulp cavity be involved or not, and after proper asepsis there is more occasion when so involved, there can never be but one answer to this simple and ancient mechanical problem and that is the support afforded by the ferrule principle. If this ferrule be nicely adjusted and sealed with a cement which only washes out the depth of the width of the joint between gold and tooth, that answer assumes a greater degree of finality.

In the molar and bicuspid region the maximum stress falls vertically or in the line of the long axis of the tooth, and is met in the all-metal shell by seating its cusps on the face of the tooth stump ground square for adaptation. The minimum stress is displayed laterally against the cusps and is met by the adjustment of the crown band to the walls of the stump. The real masticating value of these organs is dependent on the interlocking of the cusping producing lateral stress and as this stress is relieved by flattening of cusps so does the organ lose function. For example if a bicuspid morsal surface be made flat so that a root canal post may (?) do what a cervical band only *can* do in crown retention, there being but sixteen active molars and bicuspids at best, this disables two, and the patient has lost just one-eighth of his available morsal occlusion with consequences equally as dire to this first step in the great and ever growing question of nutrition.

It is thus very evident that both vertical and lateral stress are best met in these regions by the ferrule fitted cervically and extending as high as the occlusion will allow, one-sixteenth of an inch of support above the gingival line being the equivalent of one-eighth below the gingivæ from a post in the root canal, it is equally obvious, even if the conservation of the dental pulp were not in the consideration—and it undoubtably is—that the opening, and hence weakening, of the roots to meet the morsal masticating stress, is a most doubtful expedient.

If the status of the gold shell were dependent solely on the number of healthy dental pulps conserved and protected that alone were sufficient to establish it high in operative regard. A careful study of your diagrams of operations will convince you, as it has the writer, that this device rightly constructed and properly applied produces a greater degree of immunity to caries and affords greater protection from masticatory stress than any other procedure in this the operative field of the last resort.

These are indeed the days of sentient utility, time saved now means more than money; it represents economy of vital force or mayhap life itself prolonged; the finality of a dental operation, always paramount, is more than ever to be desired both by patient and operator; the extent to which the all-metal shell at its best, which is right in principle, fails to measure up to these trying conditions is in direct ratio to the conception and application of its possibilities by the individual operator.

A bridge abutment has its first prerequisite preservation of the organ, otherwise good and in part destroyed, that the bridge may exist, and for its second absolute fixation that both tooth and bridge may be preserved. The concrete forms of abutment support are the band and the post, each planned to meet different stress and just as they depart from the position for which they were originally designed so they become weak, except when combined. The term bridge, to the dentist, necessarily implies parallelism of abutment teeth and abutment crowns are of value proportionate to the case with which they are made to parallell. A study of the maxillae and divergence of tooth roots, as compared to tooth crowns, the paralleling of crowns above the gingivæ by bands as against that below the gingivæ by posts, should go far toward settling this much mooted question.

It has come to be the fashion of late among certain inconsistant operators to decry on every occasion the all-metal shell because of its glare of gold and at the same breath boast of their extension for prevention gold contours placed both anteriorly and posteriorly; to abuse fused porcelain fillings as mechanically unfit and to laud the conservatism of large and occlusally flat amalgam and gold operations, oftimes disgusting in appearance, lacking in support, and useless in mastication. It is admitted that the all-metal shell is offensively golden and its vulgar display is always to be avoided and deplored. On the other hand the use of porcelain always means devitalization, for we have no assured method for producing a lasting shell the thickness of enamel in the molar and bicuspid regions. No one doubts the ability of the profession to devitalize a pulp and by clean surgery to save the dental organ but the question arises, to the professional mind: Is it right to devitalize and take the modern aseptic surgical risk for appearance sake alone? Further, the matter is not left to the judicial mind of the operator, for the patient *will* persist in discussing the case not necessarily from cowardice but because he doubts and dislikes amputations generally, and frequently will forego a useful crown or the masticating values he recognizes in a large bridge, rather than submit and who can gainsay him, since the profession is far from a unit on the subject.

Whatever may have been said heretofore in praise of the all-metal shell applies only to the ideal and the principles involved which it is maintained are correct; the abuse of those principles in the hands of otherwise careful men; the wanton disregard of appearance and of surrounding soft tissues; the disgusting conditions pertaining about gold shells in mouths containing other dentistry of the highest type, have led many conservative operators to condemn and denounce the device rather than this abominably careless application of it.

The purpose of this paper is to call attention to the abuse of the metal shell not by its enemies, but by its chief advocates, indeed we would if we could save this good thing from its friends. The situation is not unlike that developed early in the life of the profession when the use of amalgam was deemed the badge of the charlatan; the very men who used, abused, and praised amalgam brought down upon this substance, which today preserves possibly more teeth than any other in the operative field, the righteous wrath of the high toned minority striving to uplift a craft into a profession. Amalgam and the all-metal shell alike have such intrinsic merit that no amount of faulty technique, from which they both still suffer, can permanently condemn them and, this, like many other dental discussions, resolves itself into one of technique.

Bands fitted cervically and extending vertically into the soft tissues versus crown excision and adaptation of metal plates or porcelain crown edges which extend horizontally beyond the edges of the root face; both are bad and there is no distinction save that "twixt tweedle dum and tweedle dee;" both interfere with that immunity presumably active in the normal gingival space and defeat the very end to which the crown edges were so fitted; both succeed when carefully done; both fail through faulty technique, for there can be no appreciable difference as between gingival irritation and its sequelæ, inflammation and alveolar recession, recurrent caries and pyorrhoea, etc., whether set up by the edges of a gold shell extending down into the soft tissues, or from the rough edges of an all-porcelain or plate on dowel crown or even the root itself extending laterally, with this exception that the excised and thus apparent root face is much easier of approach for crown adjustment.

A prominent porcelain operator, who abhors all bands and teaches devitalization and excision of bicuspids and molars with restoration in fused porcelain on platinum root plates supported by posts, is on record as saying: "The fitting of a band under the gum is like drawing a pig with your eyes shut." And so it is, if he takes no precaution to push back the gingivæ before so fitting a band he has never in his life adjusted one correctly save by chance, no more than he has made a filling cervically seated under like conditions.

It has also been very pertinently said and with all the truth that "It is indeed a grave reflection on our profession if after all these years of development with a finger craft far in excess of any of the professions, the dental surgeon cannot adjust a band to a root without permanently damaging the surrounding parts, when for many more years the general surgeon has successfully applied silver plates after brain surgery and yet it would appear that we stand unacquitted of this charge."

The pulp in vital teeth, from excessive grinding to parallel in difficult bridge cases, irritation from cements and thermal changes, etc., may be shocked and infected through the dentine to the extent of a fatal pulpitis. These cases do occur frequently and the good judgment of the operator should be exercised to select his cases and to treat dentine exposed as he would in operative dentistry, then and only then will it be found that the number of pulps dead from such causes will not be in excess of the best in operative dentistry.

There may be many reasons given for the prevailing disparity of opinion as to the merits of the all-metal shell; where such persistantly shocking results follow its use in the hands of otherwise good men, in the judgment of the writer there can be but one, and that lies in the fact that the all-metal shell and crown and bridge-work generally have from the very beginning been labeled "mechanical dentistry"—something to be made afar and willy nilly placed in the mouth—they have to their discredit been consigned almost entirely to the work-shop whereas common sense demands that they be considered operative dentistry; something built directly on the dental organs in the mouth and at the chair.

No one thing today is doing crown- and bridge-work, that intricate unison of operating room and laboratory, greater harm than these "ready-made," "hand-me-down" crown methods; shells made on composite sizes like shoes; seamless systems no end; "fit guaranteed and crown on in twenty minutes;" crowns constructed from plaster casts shipped to the wholesale laboratory man who advertises: "Let us do your work while you sleep, six thousands bridges made last year, see our testimonials." As the cash must accompany every order necessarily this work is foisted on the ever gullable public, for it is so much easier for the patient and operator than long and tedious sittings, that it stays there at all is an everlasting proof that the underlying mechanical principles of crown- and bridge-work are correct.

So long as these practices pertain and they are on the increase, witness the "ads" in dental journals, just so long will this continual gum "recessional" with its ugly variations ring in our professional ears; just so long will it be impossible to convince the medical fraternity of our sincerity in preaching a crusade on dental hygiene and mouth prophylaxis whilst they repeatedly see in the mouths of mutual patients ill fitting bands and their concomitants and note the filth collecting about so-called "self-cleansing" bridge-work.

So we could close this paper with the plea:

First.—For the continued use of the all-metal shell and the band fitted cervically where the tissues will permit and they are conservatively indicated, for it is manifestly inconsistent to condemn the band anterioraly when needed and then to use it posteriorly.

Second.—That inasmuch as there has never been devised a method which is practical for obtaining an accurate impression of the gingival and cervical tissues as these parts present *in situ,* the fitting of a band gingivally may be considered as operative dentistry and treated with a care equal to the adjustment of gold to the dentinal tissues elsewhere in the mouth by the operator himself. So long as the pure gold 22-k. band, finished to a fine edge, maintains its present ductility inherent only in that metal establishing perfect adaptation, when stretched on the root periphery, just so long will there be little excuse for using other methods less accurate; and we submit it may be accomplished with greater ease when the parts are in view than to swage, burnish or otherwise adapt a plate of metal to the root face, or to grind in an all porcelain crown without extension into the tissues.

Third.—That the gingival borders be tucked back so that the parts may be seen and the exposed tooth surfaces be prepared and treated with as much care as in cavity preparation generally.

Fourth.—That the contour in a crown no more than in a filling is there for beauty alone but to protect the gingivæ buccally, lingually, and interdentally from the impact of food to which it has been exposed by grinding that the band may fit. Contour should be restored in full, many resession cases are blamed on bands when really due to lack of contour in the superimposed crown. This can rarely be done in the laboratory and only intelligently by having sufficient flare in the band occlusally and adjusting such on the tooth at the chair in close contact with adjoining inter-proximating surfaces and in full form bucally and lingually.

Fifth.—Correct occlusion can no more be obtained in crowns from ready made forms than in a filling, every case must be a rule unto itself and be carved or adjusted to not only occlude but to articulate; the operator who grinds down molar and bicuspids that he may do a bridge and restores such in flat articulation not only does his patient and himself a great injustice but fails to appreciate the many anchorage and occlusal advantages the all-metal shell possesses over any other crown or type of filling.

In conclusion, the writer is firmly convinced that as ordinarily applied the all-metal shell and the cervical band are all and more than the worst that has been said of them, and were it not possible, with some little extra care and time perhaps, to follow all the foregoing simple precepts the writer not only would never again place an all-gold crown or a cervically fitted band in the mouth, but would right gladly remove every one so placed heretofore.

* * *

A METHOD OF MAKING INLAY TO RESTORE CORNER OF CENTRAL OR LATERAL.

BY DR. A. C. GREENLEE, SUMPTER, OREGON.

After matrix is invested in sump and dried, puncture the matrix with instrument near cutting edge (which will be the heaviest part of inlay) large enough to push through a little way in an ordinary pin broken from vulcanite tooth. After the pin is in and left sticking up in your matrix proceed to build up and bake as usual. Before setting cut enough from tooth to allow room for pin and make an undercut. The inlay will never come out after set, unless broken.

SWAGING WITH MOLDINE, BOTH THE MATRIX FOR GOLD INLAY AND BACKING FOR FACINGS.*

BY J. K. DOUGLAS, D. D. S., SANDUSKY, OHIO.

By using the moldine as a die the moldine seems to draw from every point, pressing the metal right into place when using it for swaging backings on teeth, and swaging matrices for gold inlays and porcelain inlays from die.

A METHOD OF OBTAINING PRESSURE IN THE CONSTRUCTION OF PORCELAIN CROWNS†

BY DR. C. S. STARKWEATHER, BELLAIRE, OHIO.

Proceed with the preparation as for a Richmond or porcelain crown. Then, instead of using porcelain mold your crown with moldine. This pattern crown is then placed on top of the core of moldine, and then that is surrounded with a metal ring. The fusible metal is poured on top of the crown. Then the crown and moldine core are separated, leaving the crown invested in the fusible metal. The moldine is removed from the fusible

---

*Given as a clinic before the Northern Ohio Dental Society, June, 1905.
†Given as a clinic before the Northern Ohio Dental Society, June, 1905.

metal by washing; porcelain packed in place of it; placed in the swager.

The swager is placed in a large vise and screw pressure of several tons forces the wet porcelain into position. The moisture is taken up by a few pieces of blotting paper placed over porcelain in swager.

Two fusings are all that is required to make a crown by this method.

I believe this method was brought to my notice by Dr. Adair, of Atlanta, Ga.

It makes a good crown.

THE EXTRACTION OF TEETH UNDER PROLONGED ANAESTHESIA WITH NITROUS OXIDE AND OXYGEN ADMINISTERED THROUGH THE NOSE.*

BY CHARLES K. TETER, D. D. S., CLEVELAND, OHIO.

The case operated on was one of a lady about forty years old, who had nineteen teeth to be extracted, upper and lower. Teeth were hard to extract, and the clinic was given to demonstrate prolonged anaesthesia for extraction of just such difficult cases. There was no undue haste made, so that eight minutes were consumed in the operation. The teeth were all taken out without the patient's knowledge. The only thing she experienced was a dream. The operation was very satisfactory. There was no sickness of any kind following the operation.

---

*Given as a clinic before the Northern Ohio Dental Society, June, 1905.

⁂

"THE PERSONAL EQUATION."*

BY J. D. PATTERSON, D. D. S., KANSAS CITY, MISSOURI.

The whiskered Russ stalked into the war against the "Silent Jap" with certain confidence, but we find that his hauteur was the "personal equation," the error of the Cossack.

Across the street from my office is the town clock, the street is eighty feet wide, the building upon whose cupola the clock rests is one hundred feet high. The face of the clock appears to me to be four and one-half feet in diameter. My neighbor in the adjoining office calculates that it is seven and one-half (7½) feet in diameter. Investigation proves that he is right. Why this difference in judgment? Because he is educated regarding the effect of distance and ocular appearance and deceptions. *I am not.* I am in error. This is the "personal equation" the error of equation. In dental literature and in discussions in societies frequent reference is made to the "personal equation." One man succeeds in an operation, in financial lines, in gaining reputation, while the other, with indistinguishable difference in ability or education, or skill, will fail. We say of the man who wins that he does so with the "personal equation." This is not strictly true, for it is the *failure of the other man* that is due to the "personal equation;" and the man who succeeds has *satisfied* the equation. *Is* the Equator. When the millenium arrives, everything will be on an equation, until then, let us seek for the personal equation and endeavor to eliminate it. If, in our observation another man exceeds our best endeavors, executes work which commands and compels our admiration and which brings to him favor, it is our fair duty—our clear course—to get rid of that personal equation standing in the way of success equal to his. Making this a *personal* matter is of prime importance, making of it a *preaching* matter, is only of secondary importance. So let us today, if we are firmly convinced that our profession lags on account of the too prevalent or too dominant "personal equation," shall we not voice honestly our beliefs and endeavor to give them substantial claim? Each of us in some manner has his own "point of view." Each has his own little world. Each of us is also entitled to this. But, while this is true, every man should mold his thought and work by the accepted level of education, science and morality.

---

*Read before the Indiana State Dental Society, June, 1905.

> "Life is a piece of paper white
> Whereon each one of us may write,
> His word or two, and then comes night,"

What is written, what is spoken, what is acted, should bear the impress of the wisdom of the world, this is especially so in the domain of science which has for its aim the relief from physical suffering. Personal traits and personal peculiarities of genius may be delightful and entertaining, but in the field of science personal traits and personal equation should be forsworn if they antagonize the scientific field which seeks to make in human existence more of comfort.

In looking at the errors held by those in the dental profession we find that ofttimes they are "dangerous in proportion to the degree of truth they contain." At the Missouri State Dental Association meeting last month in St. Louis, one of the prominent members read a good presentation of the radical cutting and extension and shaping of cavities preparatory to filling. In the discussion following a member spoke about as follows: I am in entire accord with the methods presented; with the proviso that it shall be followed in the mouths of patients where there is manifest the usual predisposition to decay and to recurrence of decay, whether this arises from faults of form, faults of structure, gum recession, or from neglect in sanitation of the mouth, but I most urgently object to following the rules laid down and illustrated by the essayist in many patients presenting, because we find many where immunity from decay is quite pronounced and the radical extraction uncalled for. The essayists answering this said: substantially: I desire to be understood as following the rules laid down in my paper quite universally, as I desire to be on the safe side. He followed the rule he had been taught as many others do, without judgment of conditions and environment, and he is only one of a large class who are not eclectic in their methods whose "personal equation" inclines to treat every condition in pathology according to rules laid down by extremists. This is one of the serious and common errors in the way of improvement. It has been fostered also by the majority of the prominent men who have written upon the subject for they have not duly emphasized that the correct operation in cavity formation must be often dependent upon conditions presented. At the same meeting another member discussing the same paper said of matrices: I never use a matrix in gold filling, good margins are not possible. The "personal equation" again. The speaker who decried matrices, to my knowledge has not the proper matrices or the proper plugger points in his office to make a matrix filling, and so presents the "personal equation" in a violent form, which is not uncommon at dental convocations. We are an *assertive* body as a professional whole and our assertions are somewhat prone to be illy considered. The man—you know who he is—name—Legion—who throws disdain upon you if you think our profession has any future unless allied to medicine, who spends his time apologizing and asking recognition. He forgets that so sure as the sun rises and sets, and the Wabash runs to the great seas, that those endowed with skill, knowledge and high ideas of ethical relationship, if they are in the dental profession, will make no demands or pleas for recognition—for "there never was a person who did anything worth doing, who did not really receive more than he gave." Our profession is hampered, we believe by those whose fad is an alliance with medicine, for the gentleman and the educated man the world over knows that every member of the human family has his recompense and his status which accords with his dissents, and they look askance at pleas and demands for place as unseeming things, especially in professional life. It is again the personal equation:—the error.

So is the clamor for social status in our profession. The recent ebullition in some dental circles and journals because a dentist had perhaps been refused membership in a certain club on account of his calling, has been to the writer as insane and idiotic a performance as could be imagined in a menagerie where the beasts were intricated. For the sake of progress we may hope that such an ignorant exhibition of the "personal equation" will not be seen again. We are frequently deploring the estimation made of the dental profession in the public mind, and yet we go on and on, accepting students into our colleges and finally, compelled to accept them into our ranks, who will continue to exhibit such rank evidence of the "personal equation" that the well-born and cultured can scarcely be criticised when they give our profession a status that some of its personnel may, but its usefulness does not deserve. This is the dental college "personal equation'' and the ''error'' is wide spread. It received its chief impetus in the Faculties Association when the crime of 1897 was committed in annulling advanced admission requirements passed in 1896. This ''personal equation'' might be dubbed the ''commercial equation,'' but by whatever name, the error was palpable, and the heritage unavoidable. Men may preach, or men may prate about the measure of respect given our profession and the social status, while those in authority afford the spectacle of taking all applicants and excuse themselves by repeating the worn argument that acceptable and successful practitioners have been hewn out of unpromising material, but forgetful of the fact that in later days there is no call to take the risk of the dread personal equation of ignorance. If the status of our profession is in our day and generation at a low ebb, what we have and did is only partially explanatory of that condition. There are other potent causes and one of them is that our concept of life is weakly understood. We look for a sign like the Israelites of old and it is not to our liking. We are waiting for truth to address us in a frock coat and kid gloves, and have forgotten our faith in high ideals, forgotten that a man's calling, however humble, is noble, if well acted. We have forgotten the language of truth is *too* true—the grab too humble. Forgotten the carpenter's son—Forgotten that there is but one religion—one humanity, and that every soul however clouded may one day rise. Then if we are asked why dentists do not enjoy the same social equality as surgeons or physicians, let us back to the first principles and know that *''to serve''* humanity is the highest concept of life and let us rid ourselves of the base ''personal equation'' of reaching for position through false signs that are only wormwood and creators of a false thirst. By what leaps and bounds we would leave the ''low vaulted past'' did we but have the convictions that ''no sign shall be given'' and that the ''work of the hands'' and brain if perfectly done, with all the limit of each individual is the highest order of nobility. Then there would be no question of ''social status.'' We should then thank God that in the revolution of the entire circle, they who *serve* are learning to *govern* and they who govern proud in the security of that *''No sign shall be given.''* If we take the unction to our souls, that we, as individuals, that our professional life, that the life of our profession, that our social status shall arrive at the zenith, by legislative enactments, by simple assertions, by the recognition of any other profession, or by our acceptance in any "400," and not by dint of work! work! work! perfect in supervision, perfect in detail, we will ever fail and show to the world another evidence of the impractical "personal equation."

The dentist we think must be convicted on this score by his, figuratively speaking, "get rich quick" ideas. He is prone to impress upon the public the influence of the stars and bacteria of the most obscure kind in the etiology of dental diseases; and on his shelves he has placed drugs galore which assume to cure where only mechanics will. He tells you that degenerative oral conditions are due to obscure climatic, constitutional, consanguineous, cabalistic, conglomerate or convivial causes, and will prescribe in dog or psuedo latin, tonics, cathartics, alteratives, eleminations, or sedatives, with a freedom to appal those who have a legal right to so do, and in so doing he prides himself that he is acquiring the right to *demand* both social standing and recognition by the medical fraternity. He is endeavoring on the contrary to "lift himself by his boot straps," while did he but condescend to reasonable mechanical therapeutics with an intelligent appreciation of thoroughness, his patient would reap the benefit and he himself would have taken another step to the higher nobility, which is secured by work well performed. Carlyle says:

"Work is the grand cure for all maladies and miseries that ever beset mankind—*honest work which you intend getting done.*"

And we may truly add that it is the panacea, if followed, for nearly all dental ills.

A very notable example of the dental professions reaching for pride and position by insistence upon subtle and obscure causes of dental disease is to be found in the history of writings on the disease commonly called "Riggs disease" or "pyorrhea alveolaris," and which is here introduced because it is an example of the desire to prove dental disease of systemic origin and because the disorder is of wide spread prevalence and very destructive of the usefulness of the dental organs. In 1892 or 1893 Dr. C. N. Peirce, Philadelphia, before the New York Odontological Society said that the graver forms of this disease had origin in constitutional and central causes "because associated with some modification of the normal composite of the blood plasma." This modification he declared was found in the uric acid diathesis and that the alveolo-cemental membrane becomes a place of deposit for the uric acid salts on account of its presence in the blood. Since that day dental literature has often echoed Dr. Peirce's declaration and conclusions, and that "the disease resists all forms of local treatment whether manipulative or therapeutic,'' and it appears unfortunate that those who hold these views have had the task of writing the text-books now used in our colleges. In an article published only last month Prof. S. H. Guilford of Philadelphia says of Pyorrhea: *"Its undoubted constitutional origin places it beyond the possibility of cure by purely local treatment, no matter how thorough that treatment may be.''* This is a fair sample of what is too generally taught and believed today, and while this is not the place to repeat arguments against these almost wholly unsupported assertions, I do most sincerely declare such teaching to be palpably erroneous and that it has caused untold suffering and loss of dental organs because it has excused operators from attempting surgical treatment which *alone* will perfect a cure. It is the error, it is the ''personal equation.''

All careful observation, all clinical examples cry out against such teaching. Scores of appreciative and careful patients have been in my hands, who have suffered themselves to be deceived, who have been deluged intentionally by barrels of alka-lithia and gallons of salicylates and iodides, and locally by anything to please the fancy of the embryo physical diagnostician, yclept a D. D. S., with no surgical care, or only the most superficial and worthless, until in despair they have, too late, sought for a treatment which was accompanied by results. My whole being has risen up to fight and declare against such monstrous perversion of dental usefulness, such patent evidence of faith in drugs or *pretended* faith—in order to screen ignorance or indolence; such lamentable attachment to the ''personal equation'' of false teachers. Oh! we want to see teachers who *are* teachers, whose personal equation is *plus* the equation not minus; who will have a genuine interest in all human interest, to be ready to pitch their books into the fire the minute they get in the way. Who will give a touch here and a touch there and abandon all grooves. Who will look to those he teaches as plants to be watered, not to be wrought into special patterns. He will rise to the *occasion!* and the *equation!* and make dentistry to be classed with any calling that ministers to the needs of man.

Along the lines of this subject nearly all of the methods and the errors in dental practice might be touched upon and an individual opinion expressed upon what constitutes the personal equation, or error, in each. In addition to what has been noted, however, I will only call attention to one or two prevailing errors which seem to demand special attention. We are, I think, apt to exhibit the personal equation in the adoption of new methods; *i. e.* not giving them their *true* value, or, in giving them an overated value. It is well to go by the following rule: ''Be not the last new things to try nor yet the first to put old methods by.'' There are still those amongst us who doubt the correctness of the practice of inserting porcelain inlays. We are sure that they ''stand in their own light'' that they are exhibiting the ''personal equation'' of the doubter and the pessimist. They doubt the durability of porcelain inlays *without trial,* they declare that the cement with which it is placed will disintegrate but they may not point to a single case where that has occurred. They say the work is tedious and a proper recompense cannot be secured—all this is said without test, and we think is wrong. ''Judge all things.'' ''Hold fast that which is good.'' Do not decry new methods until you have proved they are useless.

Upon the other hand the man who rushes porcelain inlays into all conceivable positions without regard to utility and stress, exhibits equally with the doubter, the personal equation. His knowledge of its esthetic points, the ease with which the work is accomplished for the patients, their gratitude and compliments has turned his brain, and he forgets, too often, his old and true friends gold and amalgam, and so he builds for himself a structure that under the stress of time and pressure will tumble and fall. He forgets that his work must be planned according to circumstance and environment; that he is working upon the human economy which may have variations in each individual, and which presents at different times variations in the same individual. In short, he must select his material and fill teeth with ''brains and judgment'' and get rid of the personal equation.

Of no less importance in new methods in dentistry is the use of "pressure anaesthesia." It has been a great boon, an inestimable adjunct to modern dentistry, and has rendered the operation of pulp removal comparatively simple in a majority of cases, but we incline to the opinion from personal experience and from personal observation that an error is committed in the unlimited forcing of cocaine into pulps with little regard as to whether it is forced beyond the apex and into apical territory or not. We have I think proceeded upon the theory that we ''cannot have too much of a good thing''—and so cocaine has been forced unnecessarily beyond the apices of roots into the tissue beyond, destroying nutrition and nature rebels at the abuse; inflammation ensues we believe from this cause alone, and the normal function of the parts returns very slowly. When immediate root filling is practiced, when the tissue is thus abused and there is no outlet for the products of inflammation, distressing continuance of the soreness may remain for several days, and while we may have in the first place succeeded in ''painless pulp removal'' yet the after results are more distressing than those following former methods of pulp eradication. There is then the error of *over* doing as well as error of not doing enough. Hasten the day when each and every one of us in all dental operations in all professional life, in all citizenship, shall forsake error, and balance the equation.

DISCUSSION.

Doctor Sexton:—The term 'personal eqüation' has always been to me very ambiguous and even after hearing Doctor Patterson on the subject I would dislike very much to be suddenly called upon to give a definition of it in good plain English. It mas a definite meaning no doubt but it is one of those elusive phrases that mix me up considerably.

In regard to it I am somewhat in the fix of the Irishman who arose belated one morning, jumped into his trousers wrongside before and hurried away to his work. When half way up the ladder with his hod the ladder broke and he fell to the ground.

"Are ye hurt, Pat?" asked the boss.

Pat got upon his feet and as he looked himself over he saw that he was of a most astonishing shape.

"By the Holy Saint Patrick!" he answered, "there's no bones bruk, but Oi am most domnably twisted."

And so I am as Pat says, "most domnably twisted" when I try to define the term personal equation.

But if I am rather twisted upon the meaning of the term I can yet understand and appreciate the many good things Doctor Patterson has said under that title.

First and foremost I like his disapproval of the course of those dentists who seek, more or less strenuously, for recognition and admission into the medical profession. Last year, you remember we had a plea on the other side from Doctor Weirick of St. Paul to which I took a vigorous exception at the time. I believe in a man's upholding the dignity of his own profession instead of belittling it. There would be no advantage in our tying ourselves to the apron-strings of men who are not one whit interested in the great work the dentists of today have before them. I hope Doctor Patterson will continue to state his views on the subject at all times and in all places. As I have said before it would be hard for me to tell just what a personal equation is, but I am willing to set myself on record that the essayist's personal equation is all right on this matter.

Another good point of Doctor Patterson's essay is its teaching of conservatism. We should ever guard against allowing ourselves to run out on wild tangents shooting off into space here and there. Did you ever know a highly educated, cultured man who was an extremist on anything? I confess I never did. It is always the ignoramus who makes the fanatic. If history proves anything it proves this. And so when that man whom Doctor Patterson tells us about condemned all matrices in all places he at the same time stamped himself a badly educated man, a lopsided man, a man unsafe to follow. Those are the kind of fellows to avoid. Whenever I hear a man holding forth dogmatically on any extreme position, shy off. He is a dangerous man and an uncomfortable man to be around.

And we meet them every now and then among the dentists. When you hear a man say he uses gold for filling in all teeth and all positions shy off, he is a lopsided man. When you hear a man say he uses porcelain in all positions in the mouth, shy off again, he is another lopsided man.

And though, I dislike to say this in view of Doctor Patterson's statements yesterday yet when a dentist says a gold crown should never under any circumstance be put on a live tooth, why then that dentist is lopsided too, even if he is on most occasions an advocate of conservatism for such opinion is, to say the least, radical in the extreme.

It is invariably the rule that the greater a man's knowledge the more conservative and the less an empiric will he be. Then in choosing our teachers, our men whom we can follow let the first requirement be conservatism. Let us not follow the greatest strutter nor the loudest talker but rather follow the quiet man whose superior education has enabled him to take such a high position that he can at once see on both sides of the fence.

> "A little learning is a dangerous thing;
> Drink deep or taste not the Pierian Spring;
> There shallow draughts intoxicate the brain,
> And drinking largely sobers us again."

And so for a remedy for this error of the personal equation let us adopt the policy of enlarging our view, of acquiring more knowledge. Let us become readers and students. Let us set ourselves to the task of collecting a good library and of knowing what the books in that library contain.

It has been advocated by some that the requirements of admission to the study of dentistry should be raised to a higher standard, that the embryo dentist be even required to be a college graduate, but this talk is all futile. We dentists come largely from the good people on the middle rungs of the world's ladder and our legislators will not support us in such inordinate demands. But we can bring about the same result if we but improve our time as we should. Dentists as a profession have more spare time for reading, study and general culture that the men in any other profession except the ministry. Our evenings are all our own. Do we improve our opportunities? I am afraid not as we should. I have often thought that if one but just had the power to compel every dentist in the State of Indiana to buy five hundred or even one hundred of the world's best books and read them, it would result in the most stupendous moral and intellectual uplift any body of men ever received in all the world's history. The greatest of all knowledge is not the knowledge others have pumped into us but that knowledge which we have dug out for ourselves.

We claim to be members of a liberal scientific profession and yet do you not think that we as a profession would be put to shame if it were known, for instance, just how many of us had read Charles Darwin's Origin of species? There now is a book that is a foundation stone of modern science and in my opinion no one is entitled to recognition as a member of a liberal profession who has not at least read it.

The dentists as a profession in order to elevate themselves in the world do not need recognition by medical societies nor by fashionable clubs but we do need knowledge and general culture. We need to read more and talk less. We need to become students.

For after all it is not social position any more than it is dress that makes the man.

"Worth makes the man, want of it the fellow;
The rest is all but leather and prunello."

I think it was Doctor Patterson's mission among us tonight to point out some of the leather and prunello of our professional lives that we have been mistaking for evidences of intellectual worth. In adopting teachers, in adopting views, in adopting methods of practice we must learn to push aside the deceiving leather and prunello and grasp the truth that lies inside.

Dr. J. E. Nyman, Chicago:—I feel that we have listened to a sermon tonight rather than an ordinary paper. I feel that this sermon should do us good, and that when it is published we should read it again and ponder over it. I wish for his own peace of mind that Doctor Patterson was absent from the room for a few minutes, while I go on with my discussion. I want to pay a little tribute to him; I believe in offering these tributes to people while they are living and while they fall on ears that hear and not wait until they are gone and let them fall on ears that hear not. I have known Doctor Patterson for years and years, and the years have only served to increase my respect and affection for him. I know him to be a man of culture, a man of sound judgment and ability; a courageous man, and a loyal friend. Doctor Patterson is one of the men who make me feel that this earth is a good place to live in, and that I ought to be thankful I am living in it right now.

I have been very much interested in looking forward to this paper, because I felt it would be along a sort of philosophical line. The title suggested that.

There seems to be a great deal of doubt in the minds of many as to just what is meant by the "personal equation;" I do not know whether this explanation is original or whether I have heard it somewhere else and forgotten about it. But it seems to me that the "personal equation" is nothing more or less than "the individual variation." We have certain laws of nature. All men resemble one another in many striking ways and yet there is a striking variation in individuals, and sometimes this variation shows itself amog the individuals of a profession. We find different results as a result of this variation in individuals. This evidences itself in the difference in perception of men. One man will see a thing that another man does not see. It may be that this "personal equation" evidences itself in differences of judgment. One man's judgment may be sound and grasp all the factors in a case that presents itself; another will be false because of failure to see some factor which he does not consider, and again there may be "a "personal equation" showing itself in individual variations in details of operation. But I feel gentlemen, that this personal equation and individual variation is being reduced all the time. I think years ago the personal equation was a very much larger factor in the profession than it is today. I believe that as we discover and accept the truth, and as we solve the problems of the profession the personal equation will be reduced to a negligible quantity.

I agree with my good friend Doctor Hunt, and believe we are members of the profession of medicine. Now gentlemen, the profession of medicine does not mean simply the administering of drugs internally and externally. It is a profession of healing ailments, relieving suffering, correcting deformities and controlling disease. I feel that we have a hand in this just as much as any member of the medical profession today. Really, gentlemen, you are very much mistaken in regard to the feeling you believe the medical profession entertains toward dentists. The American Medical Association has created a section of stomatology to which the dentists are welcome. I attended the last meeting of this society. This is a greater step toward the affiliation of the two professions than dentists have attempted to make. I want to tell you another thing. The big men of the medical profession, and the men who have lifted it up, fully appreciate the value of the services rendered by the dentist. I am called frequently, as are many others, into consultation with doctors—medical men—upon some obscure case, to see if as a specialist I can find a cause for the disease of the patient which is not apparent to them, and I have been treated with the same deference as any member of the medical profession that was present.

A great many of us chafe over the fact that we do not receive social recognition from the public in any way as do the members of the profession of law and medicine. I do not believe we ever will so long as we are known only as dentists. By the public the medical man is regarded as the guardian that stands between him and deformity and death; the attorney is regarded as the man who stands between him and the loss of life, liberty or property. The public never feels that the dental surgeon is the guardian which stands between him and serious deformity and danger of death. Gentlemen, the public and the world has always been ready and willing to recognize and reward those who deserve it. As we show evidence of ability, learning and culture, just in that measure will we receive our just rewards, and I think the future is bright for us.

I am one of those who cannot believe there was a fall of man. I believe from the time man started his existence in prehistoric times, he has been going onward and upward, and the knowledge which has come to us proves intelligence and effort made in the right direction means progress onward and upward, and I really believe the time has come when this profession of ours will receive what its just rewards are and that time will reduce the problem of "the personal equation" to a negligible quantity.

Dr. J. P. Root, Kansas City, Mo.:—Unlike Doctor Nyman, Doctor Patterson's paper was a great disappointment to me. Three days ago he gave it to me with the request to read it, so I could discuss it intelligently. my courage was not sufficient to both read and hear read such a bombastic lot of statements, which Doctor Nyman compares (with tears) to a sermon, but how he can draw such a comparison never having heard a sermon is beyond me.

There are two questions in the paper worthy of discussion, the first is "social recognition," a subject some of our dental journals have been hashing and rehashing during the past year, and it is the most disgusting rotten literature imaginable, and in most cases the writers do not deserve any recognition, social or otherwise, and the fact they write complaining of their lack of recognition, demonstrates their unworthiness.

The only statement in Doctor Patterson's paper that really amounted to anything was the last one, and I will admit now, it was put in at my request, that is the abuse of pressure anaesthesia. The paper of Doctor Holly Smith read at Boston a short time ago, impressed me more than anything has of late, with the deplorable amount of damage done by the indiscriminate use of cocaine, and while I call Doctor Smith a friend, I must say his paper was full of "tommy rot" and coming from a man of his prominence, must result in disaster, especially to the young men who are ignorant enough to follow his advice, when he says, never use arsenic, and its use even when properly used, always results in permanent trouble to tissues beyond the apical foramen, my contention is that trouble will result at this point from the use of cocaine, ten times when once from intelligent use of arsenic, simply because undue pressure upon an undue amount of cocaine results in inflammatory and septic conditions at this point, not common with arsenic, and in a great many cases results in a permanent soreness, where immediate root filling is practiced, I do not condemn the use of cocaine, my advise is, use both cocaine and arsenic, and use judgment before using either, but if you do use pressure anaesthesia followed by immediate root filling look out for subsequent inflammation and pain, which even in subsiding 24 or 48 hours, is an entirely unnecessary infliction upon the patient.

I will admit that years ago I often had trouble following the use of arsenic, due in no way to the drug, but to my own ignorance, this ignorance due to my teachers. I will not mention names as I do not care to embarrass any one present.

I believe in my practice, for lack of time on my part, or that of the patient, or for common sense reasons I use arsenic in thirty to forty per cent. of the cases, and I not only believe, but know, that not in more than one per cent. of these cases is there any pain or after trouble.

Doctor Tileston, Louisville, Ky.:—I enjoyed Doctor Patterson's paper very much indeed. The Doctor has presented an array of valuable and interesting truths with which one could hardly take issue in discussion. There seems to be rather a vague idea in the minds of most persons as to what interpretation might be placed upon the words "personal equation," and I confess that I find myself somewhat in the same quandry as the last speaker. I cannot agree however, with the statement of the essayist that "personal equation" means error. I rather look upon it as a something which enables one man to do a thing better than any other man, and hence would look upon it as a misapplication of the term when applied to one *who cannot* do a certain thing. We are not apt to give much attention to the man who fails, who commits error. The men who attract us are the men who succeed through the operation of so called, "personal equation;" those who are guilty of error fail because of a lack of it. Particularly do we see this in some of the recent operations in porcelain. There are those who achieve perfect results in the most intricate operations apparently with the greatest ease, while others, try as they may, never succeed because they are lacking in the "personal equation" which makes success possible.

Doctor Patterson:—I haven't much to add, but should like to say this. I do not want to be understood from anything that appeared in my paper, or in some remarks that have been made, that I do not believe that the dental profession in its proper practice is a specialty of medicine, because I do, and most emphatically. All I do decry is the clamor for public recognition, and I do not think any word in my paper will say otherwise. The whole keynote in my paper was that of promise that the people in our profession would receive what they deserved. Our profession by some is considered a humble calling because we serve personally our fellow-men. We administer to our fellow-men, make life more worth living, and give more comfort. If we serve them well, we are deserving of the highest praise.

I am very much pleased over the compliments I have received, as a matter of course. I have also been very much entertained. I do not believe there was anything in my paper that a gentleman of ordinary intelligence could not understand, with all due respect to Doctor Root.

I came here to be taught and I have learned many things, and if I have taught one of you to think differently and better in regard to some thing I am very glad of it. It would surely repay me for coming. "Never yet has one attained to such perfection but that time and place and use brings additions to such knowledge." That is the reason I am here today. I am glad to be here, and before I sit down I want to express to you my appreciation of your courtesy and your invitation to appear before you. I have had many honors given me by the profession and I trust I deserve some of them, but I have never received an honor that I appreciated more than being a guest of the Indiana State Dental Association, and I assure you that your meeting next year will find me present.

HIGH-PRESSURE ANESTHESIA AS COMPARED WITH CATAPHORESIS AND NITROUS OXIDE AND OXYGEN.*

BY D. H. ZIEGLER, D. D. S., CLEVELAND, OHIO.

Your society, through your executive committee, asked me to present a paper on this subject, so the subject is not of my own choice, and it is not my intention to come before you and preach painless dentistry, but to discuss such methods as may help us to obviate pain. Your conception of painless dentistry may be radically different from mine. As a profession, we are trying to reach that ideal where moral conceptions of painless dentistry are pure conceptions of reason, because an empirical element of pleasure and not of pain would be the result of our operations. Let each one answer the question for himself—are we giving our patients that element of pleasure which it is in our power to give?

We have men in the profession who have done much toward eliminating pain, and their methods serve us, as a rule, a model for imitation or criticism—their methods serve us as a standard of action with which we may compare ourselves and which may help us to reform ourselves. Although the perfection they claim can never be attained by us, yet it is our duty to obtain a complete knowledge of all their methods—it is necessary to possess a knowledge of everything that is possible and to determine it thereby in a positive or negative manner.

---

*Read before the Northern Ohio Dental Association, Cleveland, O., June, 1905.

The two great methods used are cataphoresis and high-pressure anesthesia. I might add another, and with me it is by far the most satisfactory—that is, prolonged anesthesia with nitrous oxide and oxygen. Let us consider each one separately.

The term "cataphoresis," from the Greek, meaning to carry along, appears to be correct, for there is little doubt but that medicinal agents can be bodily transferred by the aid of an electric current without suffering decomposition, at least in part. This subject has been discussed, pro and con, before this society, and it is with fear and trepidation that I again introduce it, but it remains a fact that it is an agent par excellence when properly managed.

I shall not enter into a discussion of this subject, only so far as it may help us to draw a comparison with other methods. The principles involved are, namely, osmosis and electrolysis; according to Doctor Price the cocaine is split up into ions, and the electro negative ion is the part which enters the dentine and which produces the anesthetic effect.

Time has proven that this action has no deleterious effect upon the pulp, providing too large a dosage has not been used, and with the aid of the ammeter the operator can tell just how much current is passing. The ammeter is just the same in cataphoric administration as the scales and graduates are in the dosage of medicine. It remains a fact that frequently after I have put forth my best efforts, a horrible failure stares me in the face, but invariably it can be traced to some source of imperfect application.

There is no process in dental practice in which success depends so much upon the precise carrying out of every little detail as in cataphoresis. The following may be enumerated as some of the little things which produce big failures:

The slipping of a clamp; the leakage of the rubber; the presence of an unsuspected filling; a broken connection; pressing the rubber below the enamel margin in the region of the cavity; and in large cavities cocaine does not penetrate to any extent in a lateral direction, and many operators fail to succeed by overlooking this step; in cavities of this nature it becomes necessary to confine your solution to a small space, and anesthetize the pulp—an unsteady electrode is often sufficient to cause a failure; during the application of cocaine the rapid loss of the solution by electrolysis, which is going on in the cavity, produces a constantly changing resistance. It is, therefore, important, as one of the first steps, to secure the electrode in the cavity in such a manner that it will be steadily held, and the cavity must be kept constantly moist with cocaine. In other words, to secure success it is necessary to have perfect insulation. If this is accomplished, I honestly believe that 99 per cent. of all teeth can be anesthetized, providing sufficient time is spent on the cavity, but right here is where the great drawback to this system comes in. It is claimed that the average time consumed is from eight to twenty minutes, but my experience would place it from twenty minutes to one hour. The advantages that can be claimed for this system are:

First: It is not necessary to drill a pit into the healthy tooth in order to make your application.

Second: The dosage is under the control of the operator.

Third: No pathological effects.

The disadvantages are:

First: The minute attention to every detail in making your application.

Second: The length of time consumed.

High-pressure anesthesia is a method recently introduced. As you are all familiar with the instruments used to accomplish it, it is not necessary to describe them; as to its merits I feel safe in saying that it is one of the most successful and useful instruments we have, providing the physiological effect are not of such a nature as to bring about pathological conditions. The secret of success lies in forcing the solution through the tubuli and anesthetizing the pulp; these tubuli are microscopic and about one-thirty-five-thousandth of an inch in diameter; within these tubuli lie the dentinal fibrillæ, which are processes from the peripheral cells, the odontoblasts of the pulp.

Dentine itself is an elastic substance; a cube of eight-one-hundredths inch, under a stress of one hundred and fifty pounds pressure is compressed four per cent. of its thickness, resuming its form after removal of pressure. With these few facts, let us reason what the natural result might be.

The syringes are supposed to have a pressure of three thousand pounds to the square inch, after securing a perfect contact point, and the solution is sent on its mission; is it not reasonable to suppose that all organic substance in its path must be scattered in some direction, presumably towards the odontoblast and pulp? Secondly, the dentine being elastic and with this enormous pressure back of it, it becomes a reasonable deduction that in teeth where dentine has formed at the expense of the size of the dentinal fibrillæ, and the solution should meet with an extra amount of resistance, that it would be possible for the dentine to expand towards the pulp and help to produce an irritation. This can readily be understood by studying the histological construction of the pulp.

The arterial supply of the pulp enters the apex of the root, which subdivides, and the vessels loose their muscular coat at an early period of subdivision. The capillaries which lie beneath the odontoblastic cells join veins of larger size, in which the middle coat appears to be absent. It is not evident, then, that should pulp arteries and veins lacking this muscular coat be subjected to increased intravascular tension, produce danger of injury to their walls and bring about hyperemia and inflammatory conditions? This condition is imminent and cannot be disputed. Of course, it remains to be proven that this slight mechanical disturbance, as stated, can bring about this condition. To me it is possible and probable. In the application of this method it is necessary to drill a small pit into healthy dentine, and this I have not been able to accomplish without causing some discomfort. Of course, the discomfort is so small, when taking into consideration the amount of pain you are able to obviate, that it is hardly worth considering.

Another source of danger is the combination of medicaments used. To anesthetize a tooth for the preparation of a cavity, I fail to see the necessity of combining adrenalin chloride with cocaine—cocaine is considered a general poison of protoplasm; it produces a feeling of constriction and contraction of the vessels; its astringent feeling is easily explained by its affinity for protoplasm. So with this drug, we have an agent that produces paralysis of the vessel-walls; *i. e.*, of vasomotor nerves. Black's researches show that vessel-walls may recover their tone and the vaso-constrictor nerves their functional activity after slight paralysis, but if they are subjected to over-stimulation, they become inactive and the vessel-walls yield to the pressure of the blood column, and the result will be death of the pulp. The reaction depends wholly upon the amount of disturbance there has been produced in the blood vessels; therefore, the less constriction there is produced, the less danger there is of any after effect.

If it were possible to measure the dosage, the same as in cataphoresis, so that we could carry our tooth just to the point of true anesthesia, and not produce an over-stimulation, this method would be par excellence to anything we have to-day, but, as it is, time alone can only decide what the final result will be.

The advantages of this method, over cataphoresis, is a saving of time. The disadvantage is that it is not always possible to drill your pit into the cavity, but often becomes necessary to drill into the healthy part of a tooth. Second, danger of carrying infection into the pulp, unless the pit is drilled into healthy dentine. Third, if a pit is drilled through the enamel, it must be enlarged so that the sides of the needle will not press on the enamel margin. I have seen the enamel of bicuspids checked clear across the buccal surface, by trying to make a contact in this manner.

The preparation of cavities with nitrous oxide and oxygen is one of the most satisfactory methods I have ever used. With this method I apply my rubber dam and prepare my cavity as far as possible, then apply the nose-piece, and hold the patient with nitrous oxide and oxygen until the cavity is completed. I have held a patient long enough to prepare two compound cavities in bicuspids. The drawback to this method is that the majority of patients do not like to submit to being anesthetized, and it is almost necessary to have a competent assistant to look after the anesthetic.

In presenting these three methods, I will leave their fate to the intelligent discussion of this society.

DISCUSSION.

Dr. H. C. Brown, Columbus, O.: This and similar subjects, are exceedingly interesting to me, as I am always anxious to familiarize myself with those things which will in any way assist in lessening the real pain, together with the imaginary fear, that has been associated with dental operations for years and thereby made edentulous mouths for many and cowards of many more.

I am heartily in accord with all methods that will give relief in this particular phase of our work, but must caution the enthusiast of every special method that because he may be eminently successful with his or some other particular appliance, it does not follow that all others can secure the same results and some other method or appliance may be used to a better advantage; this is equally true with many of our patients as what may prove successful with some may fail with others.

The essayist requests that each one answer the question as to whether "we are giving our patients that element of pleasure which is in our power to give?" If the Doctor wishes to convey the impression that we are expected to make these visits as enjoyable as an evening spent at the Grand Opera with friends occupying a choice box, then I am ready to admit that I am from Missouri. If, on the other hand, he refers to the pleasure the patient derives from the use of our best efforts to restore lost and carious tissue to perform its normal functions, then this question is an important one and demands the most careful consideration from us all.

Cataphoresis, with some, has proved very successful, but not so with myself; however, I am quite willing to assume that more or less of this may have been due to faulty manipulation, together with the fact that this was when the appliances were first introduced, and now we recognize that when compared with those on the market today they were indeed very crude.

The essayist has enumerated the many chances of failure, which we all must recognize, and associate these with the possiblities of future pulp disturbances which are liable to occur when excavating a cavity in a tooth, the pulp of which has been thoroughly anesthetized by cataphoresis or any method, due to the close encroachment upon this very vital little organ. Then when we consider that the patients who so particularly require the absolutely painless methods, are those of a nervous temperament and the necessary preparation and precaution of the operator together with the suspense of this nervous individual and the extra time required to successfully accomplish satisfactory results, is to us so great, that I have never felt that cataphoresis was so generally applicable to the profession and the public as some would have us believe. Do not understand that I am criticising this very efficient method in the hands of those who are competent to successfully use it, and who are fortunate enough to have the clientele who fully appreciates the service rendered and the additional time required to render such service, but to accomplish general results we must look for some simpler method which is applicable to the majority of the profession and the average patient.

I have used the high-pressure syringe to some extent, but only where it was necessary to remove the pulp, and for this work it has proved very satisfactory. My objection for using this in the preparation of cavities is, that I have never fully satisfied myself as to whether the pulp of the tooth, or many teeth at least, would survive the shock and continue to perform its original functions.

Besides, I am of the opinion that through caries we have sufficient cavities to fill and the method of having to drill a cavity, or if you prefer, call it a pit, does not meet my full approbation, provided we can secure satisfactory results with some other less destructive method and one in which you need not be so fearful of pathological conditions of the pulp, but if this pit can be secured in some location which would be included in the cavity, when completed, then it removes a very strong objection, and its introduction has been timely.

In employing this method in cavity preparation I do not deem it advisable to use adrenalin in the cocaine solution, but using it for removal of pulps I consider that this may be of benefit in some cases where there might otherwise be unnecessary hemorrhage.

I have a nitrous oxide and oxygen apparatus and frequently make use of this by partially anesthetizing the patient which can be quickly done and by having everything ready in advance you can readily prepare your cavity or open your pulp cavity. The same danger of too close encroachment upon the pulp exists here as in the other methods and great care should be used to avoid this. I do not use this method as much as some do, but recognize it as one of the safest and most satisfactory when the ordinary precautions are used; however, there are many of the profession and more of the laity who are very timid regarding the use of nitrous oxide, but the improved apparatus which permits of the oxygen cylinder attachment makes this much safer than heretofore, and it has always been considered one of the most satisfactory of anesthetics, if not the safest.

Doctor Ziegler's subject as announced in the program goes a little further than the one he uses, and since I have been requested by your committee to prepare my discussion and bring out any points of interest whether or not the essayist introduced them, gives me the opportunity to call attention to one of the simplest and safest methods in use today and which may with some minor improvements revolutionize the methods now in use in reducing the pain associated with cavity preparation. You will please note that I said reducing the pain, not totally eliminating it, and this to me seems all that is required in most cases of cavity preparation and necessarily holds the operator in check from too close encroachment upon the pulp as would otherwise be possible in either of the other methods mentioned.

I beg to call attention to a little appliance known as the Knowl's Obtunder and which consists of a hand-piece attachment which slips over the hand-piece and has an adjustable piston or nozzle which can be directed to play upon the end of your bur. This hand-piece attachment is connected to a small double-cylinder wall-attachment by tubing and this likewise attached to your compressed-air plumbing, or tank, and I would advise that you always have some pump other than one by hand, as this uses considerable air. When ready to begin your cavity preparation, you turn on the air at the hand-piece attachment by the aid of the thumb-lever, or controller, and this permits the air to pass through the cylinder which contains an obtundent solution and this, playing directly upon the part of the cavity, acts in two distinct ways, that is, you get the benefit of the obtundent and at the same time you reduce the heat or friction caused by the bur; besides, this readily keeps the bur clear from the chips or cuttings.

This is particularly applicable to those very sensitive cervical cavities, that we as well as our patients so much dread, and I am of the opinion that we get our best results with this class of cavities, due to the exposed location which permits of free access.

In more obscure locations this hand-piece attachment can be removed and your assistant can direct same to an advantage.

This to me is one of the simplest appliances in use for the prevention of pain in dental operations, and if I never used it for anything other than cervical cavities I am certainly glad that I have it for those cases.

I will go further and say that if I never used it upon the teeth of any one other than my wife I will always be glad that I purchased it. In explanation of this last statement will state that while attending the International Dental Congress at St. Louis I was impressed with this appliance and finally my opportunity came to test its merits when Mrs. Brown, who had been doing the Fair while I was busy at the Congress, came down to the meeting one afternoon and after a certain amount of pursuasion she consented to my trying this upon a very sensitive cervical cavity, which I had been unable to secure her consent to do other than cauterize it from time to time; the result was that I bought one and only recently used it upon similar cavities for her with equal satisfaction to us both. When we can satisfy the members of our family, so far as reducing pain is concerned, we have accomplished something, to say the least.

Dr. H. E. Bishop, Cleveland: Pain is a relative term and has as many variations as there are patients to operate upon; also an operation that may be painful at one sitting may not be so at another time. To my thinking at least fifty per cent, to put the average low, of our dental operations are without actual pain when nothing more than care and sharp instruments are used; therefore, the most effective method which the dentist can use is to gain the confidence of his patient, and all other means to obtund pain should be supplementary.

High-pressure anesthesia is as yet a novelty and, like all new things, must and will find its place in every well-regulated practice. The essayist has compared it with cataphoresis and with nitrous oxide and oxygen anesthesia. The comparison with cataphoresis is perhaps well taken, for certainly the ideal anesthetic as applied to the preparation of cavities for the filling of teeth must necessarily be of local effect only. The essayist has enumerated the difficulties and advantages in the application of cataphoresis and I will not repeat them.

High-pressure anesthesia fills a long-felt want in the hands of a judicious operator and I believe it is to be used with safety and success in any tooth in the mouth. Success in the application of high-pressure depends on the following considerations.

First: The neddle must be perfect at the contact point; frequently the presence of the smooth oval edge which is left after nickeling is the cause of trouble and this nickel should be ground off. A suitable mandrel is to be had for such purposes.

Second: Every operator should have at least a half dozen needles, for one needle will secure a good joint where another, seemingly the same, will not.

Third: The best place to enter a tooth is at the edge of the cavity near the normal position of the pulp, or when the cavity is not accessible, then through the natural groove. In fact, time and annoyance will be saved if, in all cases when anesthesia of the molars and bicuspids are desired, the place of application is made through the sulci. The possibility of fractured enamel is entirely avoided.

Fourth: Secondary dentin is always to be avoided and should never be the seat of application unless the operation is for the purpose of extracting the nerve.

Fifth: Avoid entering the tooth in a lateral position to the nerve, as the possibility of forcing cocaine in this direction is most difficult and sometimes impossible.

Some of the points to the credit of pressure anesthesia are as follows:

First: The rubber dam and clamps are necessary for its application. In my experience one of the most annoying operations we do is the application of the rubber dam and especially clamps, and it has always been my practice to defer the use of them as long as possible and never to use them unless absolutely necessary. I am sure my patients are grateful for this consideration.

Second: The time consumed in the application of high pressure is comparatively short and does not overtax the patience or the pocketbook of your patron. By that I mean that the ordinary operation of one hour does not take two hours or more for the required operation. Experience tells me that patrons appreciate short sittings, provided something tangible has been accomplished.

Third: High-pressure anesthesia can be used when it is impossible to use any of the known methods of complete anesthesia of the part.

Fourth: High-pressure is of immense advantage in operations for the grinding of live teeth for the support of bridge-work, and it is in such cases that the skill of the operator and the comfort of the patient are most needed.

Fifth: The efficiency of high pressure in the removal of freshly exposed nerves and the extirpation of nerves when desired on account of mechanical abrasions and for the support of bridge-work.

Lastly: Let me say that I believe that the general utility of high-pressure anesthesia is greater than that of any other method of the same class known today, if skilfully and judiciously used.

DOCTOR TEETER: I have nothing to say against high-pressure anesthesia, for it has a great mission, and I believe, as the member has spoken today, that it is the greatest discovery concerning dentistry since the discovery of nitrous oxide gas. But there are times when this fails. I do not state this from my own practical experience, because I am not in the work, but I am speaking from what I see and what I hear. I have quite a number of patients brought to my office where high-pressure anesthesia has been tried a number of times—cataphoresis has been tried—and they have failed, so that they come back to nitrous oxide and oxygen and to profound anesthesia. I had a patient sent to me from Pittsburg for sensitive cavity. His teeth were so sensitive that the friction of his lips against them caused him intense pain. It was impossible to apply high pressure to that man's teeth. I kept him under the influence of nitrous oxide and oxygen for an hour and thirty-five minutes. In this work profound anesthesia is seldom necessary.

While a patient is in this state he is conscious of what is going on about him, but he does not feel the pain.

DOCTOR JACKMAN: I think where care is used very little danger may be expected from the use of this method. In my judgment it is the greatest thing, the greatest advance in dentistry, in the last twenty-five years. I have been practicing dentistry for that length of time, and I know that nothing has given me so much comfort and my patients comfort as pressure anesthesia.

THE MOVEMENT OF THE JAWS IN THE MASTICATION OF FOOD.*

BY DR. A. O. HUNT, D. D. S., OMAHA, NEBRASKA.

With the improvements made in the methods of preparing all kinds of food in the kitchen, there should seem to be no great necessity for mastication or digestion. The chemistry of cooking is now so well understood and generally used that the process of digestion is very largely accomplished by the skilful manipulation of food by the chef or cook, and furthermore the ''hanging'' or ''ripening'' of the tougher-fibred meats assists the process of digestion and mastication materially. There does not seem to be the need at the present time for extraordinary attention to be paid to the act of mastication or comminuting food as when this chemical knowledge of the preparation of food was not so universal. The result of this condition is a considerable indifference on the part of the individuals in the use of the teeth for masticating purposes.

---

*Read before the Nebraska State Dental Society, May, 1905.

The standard works on anatomy describe accurately all the muscles and tissues that are in any way connected with the act of mastication, so also the standard books on physiology give carefully each function performed by the several parts involved, except the teeth themselves.

It is not necessary for me to go into details of descriptions found in such works, as you are all familiar with them.

Were we, however, compelled to limit our knowledge of the anatomy and physiology of the dental organs to what is contained in these works we should be at a decided disadvantage in our every-day work as dentists.

The comparative anatomists and odontographers give us very careful details of the teeth of all animals, man included.

With all these valuable instructions at hand and easy of access, yet here is still left a field for investigation for the dentist on all these subjects to collect, if possible, all the facts to be found to exist in regard to any function where the dental organs are concerned. This will not be as well done by any one else so well as it should and has been done by the investigating and scientific dentist.

I am well aware that this sort of effort is not generally given the encouragement, nor does it call forth the interest it deserves when brought to the attention of the profession-at-large. Even in the societies of our calling, such subjects are only slightly discussed at the meetings when presented. There are so many that say they want "something practical." *All facts are very practical and science is the finding and presentation of facts.* It is very difficult to give recognition to the position of those different readers and thinkers who would hold dentistry within the boundaries of art alone, or that all there is in dentistry is the making of some artificial substitute of the lost teeth or parts of them. It would be impossible for dentistry to occupy the position it does today had not the patient investigator and reader presented to us the great array of facts that were dental in their character, and are in themselves most decidedly practical and used daily by those who speak of these things lightly.

It is perhaps out of place to mention some of the results referred to.

The histology of the teeth has been developed entirely by the investigation of dentists, and the treatment of the teeth was not so thoroughly accomplished before this information was presented as since. So also the investigations of the dentist into the anatomy and physiology and pathology of the prophylaxis and the better saving of teeth.

The patient work of the dentist on metallurgy has given us practical results in better filling materials and their uses.

The investigation of the oral surgeon has made all operations in the oral cavity simpler and prevented the disfigurement of the patient. In this same field the dentist and his investigations make it posible to treat the fractures and the maxillæ in a most practical way and always secure a good bony union of the parts.

Still further the investigations of the dentist has made it very practical to now perform operations for cleft palate with a success in the restoration of speech not before attainable.

Instances could be multiplied indefinitely until there would not be any part of our daily practice that was not deeply indebted to this class of investigation, subjects called scientific or theoretical by those who are always wanting nothing but "practical" things, are thus the most practical.

The thought I wish to present is, if true, eminently practical, and will be of daily use.

.All connected with it did not originate entirely with me. A portion has been a part of my teaching for some years in dealing more particularly with the art features of dental prosthesis.

Mr. Robert Brewster, some two or three years ago, called my attention to a fact and suggested a radical change in the making of the occlusal or masticating surfaces of artificial teeth, which I am inclined to believe from my own investigations will at some time be adopted, as it will very much increase the comminuting power of artificial teeth which has been shown by many tests not to be as great as the natural teeth.

I therefore present Mr. Brewster's ideas as embodied in a paper which was to have been read at the Fourth International Congress at St. Louis last year, which for some reason did not get placed. I also have here some teeth made by him and mounted in an articulator which show clearly the ideas expressed.

Mr. Brewster says: "The generally accepted understanding of the process of mastication in the human subject is, that food is incised, crushed and ground between the superior and inferior teeth, and during these processes is freely mixed with saliva to aid its reduction and preparation for deglutition.

"The observations of your essayist has led him to the conviction that the foregoing is not in all respects correct, and that a close adhesion to the accepted view has led to error in the construction of artificial teeth used as substitutes for the natural organs.

"The view taken by your essayist is, that no grinding motion—due to a lateral movement of the lower jaw—is present in mastication. The act of the chewing being a direct upward movement of the lower jaw.

"Under the stimulus of food the muscles act without a conscious effort. This automatic action is sometimes brought forcibly home to us, when a piece of bone—which has escaped the vigilance of the tongue or mucus surface—is bitten upon with force.

"The primary action of the temporal and masseter muscles, assisted by the internal pterygoids, is to raise the lower jaw vertically, and is very doubtful whether during mastication this *direct motion* is ever modified without a conscious effort.

"When the full force of these muscles have been exerted upon food opposing the closing of the jaws, they give place to the pterygoids, whose function is to laterly displace the lower jaw, carrying with it the food from under the upper teeth that it may be manipulated by the tongue, bathed in saliva, and brought again in its position from the crowns of the lower jaw from the direct closure of the jaws.

"The cusp formation of the posterior teeth presenting as they do a series of modified, inclined planes—especially adapted for the separation of fibrous or other hard material—strongly supports the view, that although by a conscious effort during mastication the lower jaw may be moved laterally, such a movement is made at the expense of the pressure, the efficient work of comminuting food, whether of a fibrous or granular character, being accomplished only by a direct upward movement of the lower jaw.

"Assuming that the correctness of this view, the more pronounced the cusps—given a perfect articulation—the better the masticatory apparatus. Whilst this is true as regards natural teeth, it is not so with artificial substitutes. Pronounced cusps or artificial teeth have not proved successful in consequence of the liability to displacement of the denture, in fact, the general tendency in the profession is towards more even surfaces based not only upon experience as to what one form of displacement mentioned (due to food wedging between opposing prominent cusps), but possibly also upon the erroneous view that the food is subjected to a grinding action resulting from a lateral movement of the lower jaw.

"The imperative necessity of providing in artificial teeth an efficient surface for the comminuting of food, appears to require special cusp formation for molars and bicuspids, so that the food may be perfectly disintegrated without liability to tilt or disturb the denture.

"The cusp formation now presented for the first time, your essayist believes, will amply meet these requirements, for whilst presenting a much larger area of incising surface than is found even in nature (in the average mouth met with) there are no prominent cusps to catch hard portions of food between them.

"The efficiency or actual working capacity in the mouth of a full set of artificial teeth, is governed not only by its adaption and its correct occlusion, but also depends largely upon the condition of the mucus membrane underlying it. It is therefore of the utmost importance that during a temporary systemic disturbance or other cause, giving rise to a tenderness of the mucus membrane that the denture should retain a large measure of efficiency. This desirable condition is possible with teeth of the form before you. Tests made upon different materials have shown, that a pressure of fifty pounds with these teeth is equal in result to that of one hundred and fifty pounds in a human mouth upon the same materials." (The above is the paper of Mr. Brewster.)

Now we know that the food when in the mouth is moved about and also kept in place by the action of the tongue and cheeks and allied tissues. The food is kept in the space so formed between them and masticated or comminuted by the action of the occlusal surfaces of both superior and inferior teeth upon the mass of bolus. There has been a well-settled idea that by a lateral or buccal motion of the teeth from side to side in performing this act, the result was obtained.

While this may not be entirely wrong, in the main it is not correct. I have some models of natural teeth here mounted upon anatomical articulators which, upon investigation, you will see a very extensive lateral motion is not possible when the surfaces of the teeth are in sufficient contact to exert any force in comminuting the food between them. A different motion of the jaws is necessary whenever there is anything of a hard or fibrous nature to be comminuted.

The lateral motion of the jaws is very little, in fact I am surprised to find that it is so much less than I have always believed existed. This movement is much less than the lingu-buccal surface of a molar tooth, in fact, not more than one-half of this distance.

The movement of the jaws are necessarily in an antero-posterior direction when the greatest force is exerted. The articulating surfaces of the teeth with each other are of such a character, the lingual cusp of the superior fitting into the sulci of the inferior teeth and the buccal cusps of the inferior teeth fitting as closely into the sulci of the superior, combined with the overbiting of the superior anterior over the inferior anterior teeth, prevents the lateral movement in the act of vigorous mastication.

The antero-posterior movement is possible and in the faces worn upon the surfaces of the teeth as shown by the models presented, indicate that this is the movement in common and at the time the greatest force is active, the facets extending as they do from the occlusal margins of the incisors to the sulci and cusps of the bicuspids and molars that are in apposition.

A more practical investigation of this movement may be made by observing these facets as shown in the mouths of patients you see daily. A still more practical one is to observe in yourselves the motion of your jaws while endeavoring to comminute a tough, fibrous piece of poorly-cooked meat, or other food.

I have in mind some further methods of investigation along this line and will present the results of the same at some future time.

DISCUSSION.

Doctor Cook: I might say, perhaps, from the knowledge of my own anatomy that I can chew a little bit laterally. This subject was brought to my notice some time ago by Mr. Brewster, whom Doctor Hunt has spoken of, and we had a lengthy talk one day and experimented on each other to see how we chew, and when we got through Mr. Brewster, who is an Englishman, says, "By Joe, you are a good chewer."

There is presented in the paper some very interesting things and perhaps some facts that would really require considerable investigation to clear up in the minds of many. The question as to whether or not it is possible to bring into play very much the so-called lateral jaw motion in the mastication of food. I think on the whole it is true beyond question, that we use all the force possible for the mastication of food which is an up and down motion, or practically so, the lower jaw being brought forward in the act and carried posteriorly during the bringing of the pressure of the jaw or teeth together on the food. I think that is illustrated, if we think for a moment how many times the abrasion of teeth, for instance where there is an incisal occlusion of teeth where we have the central incisors that are considerably worn, while the back teeth are but little interfered with, showing the lower jaw is brought forward and the incising edges come together in the motion and is drawn backward as the pressure is exerted on the food. I am not really prepared to go into any discussion of the subject but I think it is really a very interesting one. I might say, however, that I think we will find many times in the teeth that there is an abrasion of certain of the bicuspid and molar teeth, that is noticeable early in life, that is due very largely to the lateral motion or by-pressure, that is a lateral one, and therefore produces this condition in many of the teeth. I would like to hear this subject further discussed, and I would like to have Doctor Hunt, who is probably one of the most competent ones, take up the subject and investigate it and give us some lucid facts in the case.

Doctor Wait: The paper is very interesting, and it brought to my mind a case which I saw in Kansas City, at the time of the general meeting there some seven years ago, in which Doctor Patterson had constructed an artificial denture, upper and lower, and arranged them on a model. He had ground the cusps entirely away, made little grooves in them, but different from the model that Doctor Hunt passed around here, made by process; instead of the grooves running in one direction, Doctor Patterson made these grooves running cross-wise, and he showed that plate. I had often wondered since then that that matter had not been more thoroughly discussed. I made a plate in my practice, using the cusp on the teeth as we find them naturally, setting them so that they articulated well. But in a majority of cases we find that a very difficult matter. I am of the opinion that from the best record I have been able to keep, that I have got the best results where I have ground the cusps pretty well off, leaving a rough surface on the tooth. I think in those cases I had better results. I hope this matter, as Doctor Hunt has said, will be taken up and carried further along. I am very much interested in it.

Doctor Warren: This is one of the most instructive of subjects, the occlusion of teeth. We can learn something from this natural occulsion of teeth, and adopt it in our practice. Some one has said we should masticate our food from twenty-five to fifty times. That becomes very tiresome for one whose teeth are not perfect. I know what a perfect set of teeth are; I have one. I masticate my food perfectly and this is one most instructive thing. If there is any thing disgusting it is to see a perfect set of teeth which do not occlude. Therefore we should have that in mind; the more perfect manner we should make artificial teeth.

It reminds me of an old lady who was giving thanks in a prayer-meeting. When everybody had thanked, and when it came her turn everybody wondered what she could be thankful for. She said, "Oh, Lord, although I have but two teeth, they hit."

Dr. L. P. Davis: The subject has been taken up from the point of comparative anatomy. The motion (in mastication) for a man being what is called the omnivorous, that is up and side, a side motion. Take the cow, and it has the side motion; take the canine, the dog, and it has up and down motion. To discuss this paper from the standpoint of comparative anatomy and prove which of the three animals really have the best digestive powers, we should then discuss this in a scientific manner. However, they all seem to contribute. The dog seems to thrive well with up and down motion; the cow seems to digest well with the side or lateral motion, with never an up and down motion. Man seems to thrive well without any front superior teeth. I would like to see this subject discussed along a scientific method—which of the three animals has the best method of masticating its food?

Doctor Hatfield: There are so many phases to this subject that we are getting badly scattered, and we seem to be trying to travel several roads all the same time. It is hard to tell what we are discussing, whether the canine feature of mastication or the omnivorous, or what else. It is evident that man has a greater variety of food than any other animal, or is liable to undertake to masticate a greater variety or kinds of food than any other animal. The cow with her lateral or side motion is just right for masticating grass, hay, and alfalfa. The dog is prepared to eat meat and gnaw gristles off the bones and such things, and his teeth are made for it; and the horse has great, big, broad, flat, square-ground surfaces on his teeth made to chew off corn. It is made on the same principle as the old-fashioned millstone. We had better confine our remarks to what we are trying to bring out. I presume there are a great many members of the society who remember that I gave a clinic before this society in Omaha about five or six years ago, where I articulated a set of artificial teeth, and ground the cusps off of them. Artificial teeth are not made right—they are not made right, only to sell. There are three hundred different moulds, and there are not any of them right at all, but they are able to be evenly arranged and articulated on almost any kind if a model. I think fifty years ago there ought to have been a bold, radical change in the moulds of artificial teeth. God Almighty is the best dentist. I think the best thing we can do is to stick to our glass-blowing with reference to the natural teeth, and when it comes to replacing the natural teeth with artificial ones, we better try to improve on them all we can. I think there is a great possibility of improving the shape and size and construction generally of the artificial process teeth.

Doctor Wallace: I remember the time Doctor Hatfield gave that clinic and I remember how well he was scored on the subject; he was raked up one side and down the other. He said it was very convenient to knock off a corner here and there. Doctor Bonwill had a hobby on that subject; and he said that the time would come when the moulds for our artificial teeth would be changed. I do a little glass-blowing, and I expect to make a few dentures, and I have found it convenient to knock off a little cusp here and there. I think that the moulds of the day are diabolical; they look pretty and that is about all you can say of them.

Doctor Hunt: I don't know that I have much to say further than this is a question for you to think about. This is practically a new subject. I have investigated somewhat for a year or two, but this is not very long for a subject as important as I think this is. I think, however, you will be interested if you will demonstrate upon yourselves how little of the lateral motion of the jaws there is. If you try to move your jaw laterally you will find it requires an effort to do so. Still further as you look along the occlusal surface or sulci of the teeth, it is a perfect groove from the cuspid tooth through to the last molar. That groove is not interrupted by any cross obstruction. There is a distinct antero-posterior motion, where the overbite is extreme; they are worn off shear-like; leaving sharp edges like a knife-blade. That wearing is done by this antero-posterior motion in the effort of the jaw to masticate the food. In this class of cases that are worn shear-like the individual could never get the edges together. It requires an extreme effort to give a lateral motion to the jaw. You can test this movement, and there is not a very extensive lateral motion of the jaw. I have been very much astonished to find how little there is. However, there is a slight lateral motion caused by the two inclined planes of the teeth as they come together; the cusps of the teeth do not fit directly into the sulci of the teeth.

As the cusps fit down into these depressions the food is forced along the two inclined planes against which the food lies and never away from them. I would suggest to you, if it interesting to you, that any time you are at the table, notice the manner in which you chew your food. You will be astonished to see how little you have of the lateral motion.

* * *

PORCELAIN INLAY WORK.*

BY EDWARD EGGLESTON, D. D S., RICHMOND, VIRGINIA.

Since the advent of porcelain inlay work, some four or five years ago, it has somehow fallen to my lot to have something to say on the subject at every annual meeting of this association.

On each former occasion I have endeavored in a general way to cover the whole field; so now I shall depart from this custom and instead ask your attention to a few commonplace facts regarding its everyday use.

When I first spoke on this subject you were advised to make your last baking exactly flush with the cavity and retain the glazed surface just as it came from the furnace, in fact, this method was used up to my second year's experience with it, and occasionally during the third, but was finally entirely abandoned.

I now practice making the inlay a trifle higher than the surrounding tooth structure and polish just as you would proceed to do with gold work.

Why did I change and adopt this method of polishing?

When I took up this work, all the advice I could get advocated the former practice; but reflection and experience taught me that the polishing was the better method and having tried both extensively there is no chance of my returning to the former.

Chief among the disadvantages of retaining the original glaze is the impossibility of getting a perfectly plain surface from the filling to the enamel which after a time results in the accumulation of a certain amount of deposit, causing a black line around the filling and necessitating a polishing later when it is difficult to remove the staining completely.

Another point which I would call attention to is that S. S. White Co's. G. is the best body to use in a vast majority of approximal fillings.

The reason for this is due to the whiteness of this body and on account of the shadow cast by the contact of the adjacent tooth the greater difficulty is to prevent the filling from appearing darker than the natural tooth structure.

---

*Read before the Virginia State Dental Society Lynchburg, August, 1905.

Generally speaking it is impossible to get a filling too white for these approximal fillings, owing to extraordinary absorption of light rays by the porcelain under the conditions named.

I cannot enter into the discussion of shadows and the laws of refraction here, but it would be well for the porcelain worker to familiarize himself to some extent with the laws of refraction of light rays (see "John Tyndall on Light.")

I am not entirely pleased with the bodies made by Ash & Sons. Every little while I see an old filling (two or three year's old), more or less discolored, a defect which I have not yet observed with either White's or Brewster's.

In the perfection of the cavity I do not care for the polished margins any longer, the ordinary round bur leaves a sufficiently smooth margin for all purposes and has the advantage of holding the cement better than a highly polished surface.

A new cement has recently been made especially for this work by the Harvard Co., of Germany, which is a decided improvement over those we have used in the past. It can be obtained from the S. S. White Company.

SUGGESTIONS

TO MAKE A SIMPLE CAVITY FOR PORCELAIN INLAY.

Joseph Head, Philadelphia.

When we consider the statement of Doctor Johnson that in order to properly prepare a cavity for a porcelain filling we are obliged to sacrifice much tooth-structure, so as to have every cavity shaped for easy removal of the matrix—what is the difficulty in filling the cavity first with cement, then cutting it out and making a perfectly simple cavity with clean enamel margins? That being done, we can make a simple matrix on perfectly clear enamel margins, make the inlay, undercut well and also with deep grooves in the old cement. I cannot see any more sacrifice of tooth-structure in this way than in originally shaping the cavity so that the matrix can be easily removed. There seems to be an impression that it is necessary to shape the cavity the way it is going to be when finished—that we have to form the cavity exactly on the lines we want the inlay to occupy. Why not prepare them so as to get this adhesion of the old cement? Make them so that the cement will act as dowels; use plenty of cement body to your inlay.—*Dental Cosmos.*

TO ROUGHEN THE SURFACE OF A SOLID GOLD INLAY.

G. S. Hershey, Michigan City, Ind.

Take a plugger point that has been well tempered and grind the end to a needle point. Insert in the engine mallet, place the inlay in something solid, preferably a hammer handle with a small end so the inlay may be held firmly, and while running the engine at a high speed direct the blow at different angles upon the inlay. This produces a surface to which cement will adhere firmly.—*Dental Review.*

UNDERCUTTING FOR INLAY.

M. L. Rhein, New York.

Before inserting the inlay the final preparation should of necessity include a most thorough undercutting of the cavity for the retention of the filling by the bulk of cement, the essayist refers in the preparation of the cavity simply to the form of the cavity to make the necessary form of matrix, and not as to the shape he intends to have when the inlay is inserted into position. I also want to say that I see no necessity for making this undercut preparation before the matrix is made, but I see great advantage in delaying it until after we have a perfectly fitting inlay to place in position. We can then remove all of the interior of the tooth that we want, so as to obtain sufficient bulk of cement to retain the inlay properly.—*Dental Cosmos.*

PYORRHEA ALVEOLARIS TREATMENT.

Robert Good, Chicago.

I consider it the duty of the dental profession to prevent the loss of human teeth, and filling alone will not do this. We must be able to cure pyorrhea also. The treatment is surgical entirely, and the method is as follows: Anesthetize the gum by passing a blunt flexible steel needle—Good's pyorrhea needle—into the pocket, relieving enough of the anesthetic from the syringe to flood it. The anesthetic used is put up by Dr. Charles Oakman, Detroit, Mich. Hold paper rolls of cotton on each side of the teeth to prevent the patient from swallowing any cocaine, should we allow too much to escape from the syringe. It is usually best to wait one or two minutes after applying the anesthetic, and then proceed to remove the deposits from the teeth, one tooth at a time, operating in this manner until all are thoroughly cleaned. When through with the surgical work, flood the pocket with warm, chemically pure lactic acid, using the same kind of a needle just referred to, and cotton rolls. Now give the parts absolute rest. Keep away your instruments, but instruct the patient to massage the gum with powdered sulphur five minutes night and morning, and if no deposits were left the case will be entirely healed in two or three weeks. All loose teeth should be held firm by ligatures or hands and the patient instructed to use a mouth wash.—*Dental Review.*

TO OBTAIN A ROUGHENED SURFACE FOR PORCELAIN INLAYS.

M. D. Littig, Boston.

For obtaining the roughened surface of porcelain inlays, coat the floor of the matrix with a thin layer of asbestos powder.

TO PREVENT WARPAGE OF PLATES.

When polishing a thin rubber or gutta-percha plate, fill it with plaster before putting it on the polishing lathe, first filling the undercuts with wax.—*Tri-State Dental Quarterly.*

THE USE OF RICHMOND METAL.

J. P. Root, Kansas City.

Do you use this valuable adjunct to many operations? If not, try it. Its advantage over other impression metals is its low fusing-point—160 degrees—52 below boiling water, enabling you to run a model over a gutta-percha impression.

Do you make molar or bicuspid porcelain crowns? If so, here is where this metal will be of great assistance. Prepare your tooth, warm gutta-percha base-plate, pressing over stump of tooth; cool with ice water, remove and invest in plaster so as to give a rim to run your metal in; separate and fasten with sealing wax in ordinary crown swedger; the result is an absolutely accurate platinum base for crown.

In swedging a matrix for larger restoration in molar or bicuspid, take impression of cavity with warm gutta-percha, paying no attention to saliva, remove and invest in plaster; run this with Richmond metal. (It is not necessary to wait for plaster to thoroughly harden or dry; two minutes is ample time). You have then a metal die to swedge your matrix on. The matrix after swedging should be inserted into cavity and burnished to place. In case the patient cannot be on hand and a more accurate model is needed, dry cavity, smear with vaseline, cover gutta-percha impression with soft cement, place in cavity, let harden and you have an absolutely perfect impression. But where possible to have patient, the first procedure is best. An ordinary barrel swedger is all that is required.—*Kansas City Dental Journal.*

A SIMPLE AND PRACTICAL PORCELAIN CROWN FOR MOLARS.

Ned A. Stanley, New Bedford, Mass.

After the roots have been carefully treated and filled, the pulp-chamber and any cavity extending below the gingival margin may be filled with amalgam, and the tooth trimmed to the gum line. This surface can be concave, convex, or flat, according to length of bite. Drill two or three parallel holes large enough to receive a No. 15 or 18 gauge platinum wire. Burnish a piece of platinum plate No. 32-gauge to this surface. Pressure with a ball burnisher will indicate position of holes on plate. Solder the wires going through this plate with pure gold. Then—with pins in position—reburnish and mallet if necessary the plate to the surface of the tooth. The platinum can now be trimmed to the exact size of the tooth and brought to a knife edge at the circumference if desired. Adjust pins to length of bite leaving a free space for the porcelain. The bite is now taken, and from the articulation you have an accurate model from which to carve and bake the tooth, which is of course fused to the platinum. The contraction of the porcelain may cause the opposite ends of the pins to spread a little, but if pure platinum is used they can be bent to the original position. The result is an artistic crown with no possible chance of irritating the surrounding tissues, and the mechanism is so simple and reliable that it is within easy grasp of every operator.—*Cosmos.*

A HINT ON CAVITY PREPARATION FOR INLAYS.

C. S. Hardy, Summit, N. J.

That is something I always do when possible in putting a filling in the approximal surfaces of the bicuspids and molars. In regard to the preparation of the cavity before taking the impression, there is one point that I would like to bring out which I think no one has mentioned, viz, in an approximal filling I find that a great many impressions are taken without smoothing off the surfaces of the tooth, and little portions of the edge of the filling are found to project over the edge of the cavity. These break off when an attempt is made to cement the filling in place, leaving an imperfect margin to the filling. By taking a disk and making the surface of the tooth smooth, a much better and truer edge for the filling is secured.—*Dental Cosmos.*

RULES FOR THE USE OF AMALGAM.

J. D. Patterson, Kansas City.

Rule First—Use gold fillings, gold inlays or porcelain inlays instead of amalgam whenever an equally durable operation can be made.

Rule Second—In using amalgam select a standard tenary or quaternary compound; alloys compound of silver and tin alone, in whatever proportion, are found to be unreliable.

Rule Three—Weigh the alloy and mercury, using an amount of mercury that will make a homogenous mass when placed in the cavity under strong pressure, without pressing out the surplus of mercury. This proportion is usually 1 of mercury to 3 of the alloy by weight. For convenience use a Fletcher balance in weighing.

Rule Fourth—Mix the alloy and mercury by shaking in a mixing-tube or test-tube. This gives a more perfect and even mix than can be made by other methods, and is also rapidly done. Make into ingots with a Fletcher ingot mold for convenience in handling.

Rule Fifth—Make all cavities into simple ones with the most suitable matrix, and in placing the filling use a small portion, or one ingot, at a time, building it together with hard hand-pressure and with the mallet. The formation of the cavity should be upon the same lines as for gold, except that the thin edge, sometimes admissible with gold, is a source of weakness with the alloy.—*Kansas City Dental Journal.*

FUSING OF PORCELAIN BRIDGES.

J. E. Nyman, Chicago.

I should advise all the gentlemen to be very careful not to fully fuse the mass of porcelain which is first put on the bridge and carved up, because fusion of the second mass will over-fuse the first mass. There is no question at all but what the fusing of porcelain is a chemical process as well as a physical process, and there is no question at all but that the chemical process goes on even after what we term fusion is completed, providing the proper conditions regarding the thermal situation are maintained. I made some experiments in that line, and I will show the specimens tomorrow morning. I took two masses of porcelain and carved them as nearly as possible into two identical blocks. They were both put into the furnace, and carried to the point of a biscuit. They came out with absolutely no suspicion of glaze to them. Then one piece was put into the furnace and carried up to the same point time and time again, and examined after each heating to see what the result was. Each time a control piece was put in there, so that I was sure I had not carried my furnace above the "biscuit" point. With the result that at the end of seven fusings I had one of the most beautiful pieces of porcelain I ever succeeded in fusing in my life. What does that demonstrate? To me it demonstrates that to a large extent "heat units" are factors in this fusing, and "heat units" are factors of importance in chemical process rather than those that are physical. That is a demonstration that the chemical processes that were instituted at the time the furnace was carried up to the point sufficient to biscuit it, were carried on when it had been subjected to the same amount of heat subsequently.

I am quite confident that we have all been fusing our porcelains too quickly. You can obtain the same result by prolonging the time of the exposure, and cutting down the intensity. We have been "broiling" our porcelain instead of "baking" it. I feel that porcelain bridge-work is to be a permanent process because it has passed through such a trying period of failures and emerged triumphantly. I beg of you to equip yourselves so that you may go on with this work, which produces such artistic results, and results that are so splendid from a sanitary point of view.—*Dental Review.*

THE FUSING OF PORCELAIN BRIDGES.

J. D. White, St. Louis.

A word of precaution incident to fusing: All porcelain bridges must be thoroughly supported before introducing into furnace. The method I have found most useful is to mold a slab of fire-clay to conform with abutments and saddle of bridge and bake. As the fire-clay shrinks some in baking, it is necessary to trim and readapt to bridge, or a thick mix of Brophy's investment compound may be laid on a slab of fire-clay at least one-eighth inch in thickness and the bridge imbedded in the investment compound until dry. Then trim to outline of saddle, and band to prevent porcelain coming in contact with support. A film of wax should be added to posts and diaphragms to faciliate removal from support. This support will last through several bakings, as the investment compound is supported by the fireclay slab, and there is hardly any perceptible change. It affords a perfect support to all metal surfaces and prevents any possibility of warping. Bake with any good high-fusing body, and finish all surfaces that come in contact with the tongue with a lower-fusing body, such as Brewster's XX or Jenkin's prosthetic body. If a gum enamel is required, I prefer Brewster's pinks, as they can be mixed with oil and laid on in any thickness desired to bring about an artistic result in the shading indicated. I prefer to set all bridges with gutta-percha and cement in combination.—*Dental Era.*

MOUNTING OF PORCELAIN BRIDGES.

Hart J. Goslee, Chicago.

The mounting of porcelain bridges should always be made with gutta-percha in preference to cement because of three very important features. First, when so mounted they may be removed at any time without difficulty or injury; second, the impact from the stress of mastication is relieved by the cushion-like effect imparted by the presence of this material; and third it is almost impossible to use cement when a saddle is employed without forcing the surplus underneath it, and when this crystallizes irritation is the invariable result. It may also be further stated that ordinary baseplate gutta-percha, while somewhat more difficult to manipulate, seems to possess greater integrity, and to thus insure a greater degree of permanency than the various so-called gutta-percha cements.—*Dental Review.*

STRESS ON INLAYS.

M. L. Rhein, New York.

There is always some stress. There is stress of mastication, and there is stress of the opposing teeth striking against each other. In preparing corners they should be ground so that the stress of mastication will not interfere with the corner, and the cavity preparation should be such that the stress of the lower incisors striking against the upper incisors cannot be sufficient to displace the inlay.—*Dental Cosmos.*

RESTORATION OF A BROKEN INCISOR TIP.

Walter S. Waterbury.

An operation for the restoration of a broken incisor tip, requiring for a successful issue a combination of mechanical and artistic skill can be performed as follows: The edges of enamel are trimmed perfectly square and sharp, and no instrument is better for this purpose when possible than a square edged stone. Then cut a groove in the dentin between enamel plates sufficiently deep to allow insertion of a wire loop or staple. In living teeth this cutting is generally painful, but this can be avoided by using Ethyl Chlorid spray, which is the most positive means of overcoming sensitive dentin in the anterior portion of the mouth. After the groove or cavity is made the required depth, platinum foil of the usual inlay thickness is burnished over the prepared surface and into the aperture as far as it will go, which is very little. Then bend iridio-platinum wire gauge No. 24 in the form of a loop, with ends serrated and made flat for greater attachment to porcelain. The matrix and wire are adjusted upon the tooth, the ends of the latter toward cutting edge, and while in position porcelain is applied in form of thick paste made by mixing with gum tragacanth or starch. The most convenient form is that which is called Ash & Sons' mixing liquid. The excess moisture is withdrawn by applying blotting or bibulous paper to the porcelain. Carefully remove from the tooth and fuse. This gives an accurate adaptation without investing or soldering.

The next step is to place the partly finished work in position and burnish the edges to place and note general requirements of contour, position, etc., and refusing until the operation is satisfactory. This form is recommended in preference to a reversal of the loop, but where the pulp is too near the cavity surface for safety the latter is preferred.

Loops or staples of this kind are preferable to pins because of easy adaptation and surety of position while under manipulation. The same directions are applied to corners and for the restoration of any other teeth.

I have many operations of this class doing excellent service after ten, twelve, and fourteen years and have no hesitation in saying that its durability is unquestionable.—*Cosmos.*

EDITORIAL

RETROGRESSION OR ADVANCEMENT—WHICH?

The saying: "The best use a man can make of his money is to take it from his pocket and put it into his brains," seems even more applicable in these days of advancement and competition than in the days when Benj. Franklin penned the words.

No dentist can afford to allow himself to retrograde, and retrogression is sure unless he advance.

The successful merchant is ever watchful of the changes that make old goods unsalable and new varieties a necessity to meet the wants of his customers.

The successful lawyer keeps posted on changes in the laws, court decisions, etc., in order to best serve his clients.

The physician must keep posted on the advanced methods of treatment and the newer and more effective remedies to be most successful in coping with disease.

And, likewise, the dentist must familiarize himself with advanced methods and means in order to give his patients the best service possible.

Dentistry in its various branches is developing so rapidly that the dentist who does not keep abreast of the times will soon find himself outclassed by his fellow practitioners. And yet many dentists are careless about their reading, especially reading of dental journals.

"I haven't the time," is an excuse often given, and what an absurd excuse it is. Haven't the time to learn how to make your services of more value to your patients and yourselves; to learn how to do better work in less time; learn how to make your operations more thorough; to develop your skill; to perform new and superior operations; to preserve the teeth for a longer time; to say nothing of the lessening of discomfort to the patient by learning humanitarian methods and putting them into practice.

At a recent dental society meeting the writer asked a certain dentist what dental journals he was taking. The astounding reply was: "I don't subscribe for any but occasionally I get sample copies." The reply clearly showed the position that dentist occupied in the profession. And it was afterwards verified through inquiry; a second- or third-rate dentist who knew a little about "fillin' teeth, and pullin' teeth, and makin' of plates."

And there are others, and many of them, who are so wise in their own conceits that they can learn nothing, or think they cannot, from the dental journals or dental societies. But such men, like Icarus, have their day.

The most successful men, and those who enjoy the largest practices, are the readers and thinkers; the progressive men who keep pace with the advancement of the profession.

Would you be content to be a mediocre, devote your spare time to the reading of popular fiction or yellow journals instead of dental literature; you will have plenty of time on your hands and it will increase as the years roll by. But would you be classed among the best, and have a practice worthy the name, keep posted in dental affairs and apply your knowledge in daily practice. No dentist ought to grudge the expenditure of five or six dollars a year for a knowledge that is worth as many hundred to him and which may be obtained by investing in five or six of the leading dental journals. Can't read them all? Then read in each that which is most suited to your needs, but take several, for no one journal contains everything of worth.

To keep thoroughly posted in dentistry is a duty every practitioner owes himself and his patients and he who cannot afford a few dollars for such a purpose is not worthy the name of dentist. But remember that no journal, no matter how much valuable information it may contain, will benefit you unless you read it.

DENTAL SURGEONS FOR ARMY AND NAVY—NEW LEGISLATION.

We desire to call the attention of our readers to the urgent appeal, of the National Dental Association Committee on Army and Navy dental legislation, which we publish in this issue.

In Congress, an Army medical bill is pending which provides for elimination of the contract system of employing medical officers and continues it for dental officers only. This, the Committee say, "has been urgently favored by prominent line officers, by the Surgeon-General, General Staff, former and present Secretary of War, the President in his message to Congress, and its adoption by the Senate. When this is consummated the Army dental surgeon will be alone in this discredited and dishonored position unless the dental profession can exert a sufficient influence on the Military Committee to prevent such a reflection on the beneficence of its function, on the standard of its schools, on its relation to other professions and on the social status of American educated dental surgeons in this and other countries."

Regarding the unsatisfactory relations that exist between the contract surgeons and the Army, Secretary Taft says: "There are no persons who learn so quickly the difference between a real and a 'Mex' officer, if you may call him such, as the enlisted men. The life of a contract surgeon, especially one who is at all sensitive, is taken up in resenting slights. It is not a healthy attachment to any branch, but a collection of men that are neither fish, flesh, nor fowl, and I think the *esprit de corps* of the whole service, that branch of the service, would be very much better if the contract surgeon could be entirely eliminated."

The Committee add: "If such unbearable odium attaches now to the status of several hundred medical and dental officers. how much more unbearable will it be if the few dental surgeons are left to bear the odium while all other officers have rank with its social, professional and official advantages."

"It is urged that every member of the dental profession write a personal letter to at least one member of each of the committee of Senate and House and urge the support of "Senate Bill 2355" and "House Bill 9737." A list of the members of these committees will be found published on another page in this issue.

A Navy dental bill, "Senate 2208," has also been offered, but it provides for acting or relative rank, the substitute for the actual rank and promotion enjoyed by medical and pay-officers, chaplains, etc. The bill does not provide for any kind of organization nor for any of the requirements necessary to be met by officers of permanent tenure, so in any future effort for commissioned rank the dentist would be handicapped by the omission of these requirements. The National Dental Association have proposed a substitute for this "Senate Bill 2208," and it is published on another page in connection with their communication.

It is necessary that immediate action be taken and we again urge our readers to peruse carefully the communication above referred to, and immediately write to members of the Military and Navy Committees at Washington, as it is only through combined efforts that just legislation can be obtained.

CORRESPONDENCE

NEW ARMY AND NAVY LEGISLATION.

To the Members of the Dental Profession:

The strong probability of legislation pertaining to the Medical Departments of the Army and Navy constrains us to again beg your aid in our long continued effort to prevent a humiliating and harmful discrimination against the dental profession. Remember the object committed to us is not merely for the benefit of a few individuals, but is for the protection of the dignity and high civil status of American dentistry at home and abroad and for the comfort, health and efficiency of our country's defenders on land and sea. If the contention we are making for the three lower of the five grades of commissioned rank accorded to all other professions represented in the Army and Navy service is supported with half the zeal and loyalty with which the medical profession supports its committee on legislation, the issue will soon be closed in our favor.

The new Congress recently placed the legislation for the Army and Navy in the hands of reorganized committees, and to some of the new committeemen the merits of our claim have never been presented. Hence the need of immediate and urgent appeals to the committeemen is imperative. *Will you co-operate in this supreme effort*—probably the last for a decade? If so write yourself, and get every one you can of any profession or business to write briefly to either one or more of the members of the Military and Naval Committees. Select at least one member on each of the four committees and address to each one selected a separate letter. It is not at all necessary that you or the friends you interest should be personally acquainted with the committeemen addressed. The object is to influence them through letters from many citizens of their respective State or district as well as from their friends and acquaintances. Write promptly and make your appeal for fair and consistent consideration of the profession's claim for the small measure of recognition provided by the bills we advocate. Bear in mind we do not ask for separate corps but only for subordinate corps *attached to the Medical Departments* of the Army and the Navy.

The pending Army Medical Bill, which provides for the elimination of the contract system of employing medical officers and continues it for dental officers only, has been urgently favored by prominent line officers, by the Surgeon-General, by the General Staff, by the former and the present Secretary of War, by the President in a special message to Congress and by its adoption by the Senate. When this is consummated the Army Dental Surgeon will be alone in this discredited and dishonored position unless the dental profession can exert a sufficient influence on the Military Committees to prevent such a reflection on the beneficence of its function, on the standards of its schools, on its relation to other professions and on the social status of American educated dental surgeons in this and other countries. No more convincing reasons can be urged in opposition to the proposed discrimination against only dental surgeons than is contained in the following statement made by secretary Taft concerning surgeons before the H. R. Military Committeee, namely:

"I have some personal knowledge of the unsatisfactory relations that exist between the contract surgeons and the Army. There are no persons who learn so quickly the difference between a real and a "Mex" officer, if you may call him such, as the enlisted men. The life of a contract surgeon, especially one who is at all sensitive, is taken up in resenting slights. It is not a healthy attachment to any branch, but a collection of men that are neither fish, flesh, nor fowl, and I think the *esprit de corps* of the whole service, that branch of the service, would be very much better if the contract surgeon could be entirely eliminated."

If such unbearable odium attaches now to the status of several hundred medical and dental officers, how much more unbearable will it be if the few dental surgeons are left to bear the odium while all other officers have rank with its social, professional and official advantages.

"S 2355" and "H. R. 9737 are identical bills and provide for a corps of dental surgeons of three grades of rank to be *"attached* to the Medical Department of the Army." All appointments to be made to the lowest grade—first lieutenant—except as stated in the following proviso, namely: *"Provided,* That dental surgeons attached to the Medical Department of the Army at the time of the passage of this Act may be eligible to appointment, three of them to the rank of captain and the others to the rank of first lieutenant, on the recommendation of the Surgeon-General and subject to the usual physical and to the professional examination herein prescribed: *Provided,* That the professional examination may be waived in the case of dental surgeons whose efficiency reports and entrance examinations are satisfactory to the Surgeon-General; and the time served as dental surgeons under the Act of February second, nineteen hundred and one, shall be reckoned in computing the increase service pay of such as are appointed under this Act."

The other features of the bill relate to minor details, and the terms of the whole bill were the very best we could possibly include without exciting an opposition that we believed would be fatal to success.

In regard to the Navy Dental bill, "S 2208," offered by Senator Hale for the Navy Department, we propose to offer as a substitute there for the draft of a bill herewith enclosed in which the grades of rank correspond with the Army Dental bills.

"Senate 2208" provides for "acting" or relative rank, the substitute for the actual rank and promotion enjoyed by medical and pay-officers, chaplains, etc. The bill does not provide for any kind of organization nor for any of the requirements necessary to be met by officers of permanent tenure, so in any future effort for commissioned rank we would be handicapped by the omission of these requirements. It is therefore very important that the Navy dental surgeon should be required on entering to meet the standards of regular officers.

It will be much more difficult to change the status after it is once fixed by law than it is to secure now the legislation that will give a satisfactory status from the start. Our experience in securing the promised changes in the status of the Army dental surgeon is a lesson which should arouse every friend of the dental profession to the most heroic and determined effort to start the Navy dental surgeon right by the first legislation on the subject.

We urge you to enclose a copy of the proposed substitute with each letter sent members of the Naval Committtees and urge its acceptance in the strongest terms possible as a measure consistent with the laws which apply to each class of the Navy personnel.

It would be a shame and disgrace for the profession, without a strong protest, to permit a few medical officers to fix and control the military and naval status of dental surgeons and deprive them of the rank Congress would willingly accord. These same medical officers are asking more emoluments of Congress for the chiefs of the female nurse corps and for a number of chief officers of the hospital corps than they are willing to allow Congress to concede to dental surgeons.

On the result of this appeal to your professional pride depends, we believe, the fate of the proposed legislation with its far-reaching effect on the civil status of the dental profession.

Fraternally,
WMS. DONNALLY, *Chairman,*

Com. on Army and Navy Dental Legislation, National Dental Association, 1018 Fourteenth St. N. W. Washington, D. C.

PROPOSED SUBSTITUTE FOR SENATE BILL 2208.

TO ADD A CORPS OF DENTAL SURGEONS TO THE BUREAU OF MEDICINE AND SURGERY OF THE NAVY.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That to the Bureau of Medicine and Surgery of the Navy there shall be attached a corps of dental surgeons, which corps shall not exceed in number the proportion of one to one thousand authorized by law for the Naval Service and Marine Corps and not to exceed thirty in all. The said corps shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, and with respect to rank, pay, and allowances and to promotions within the said dental corps, the grades named shall correspond to the grades of the Medical Corps designated "Assistant Surgeon," "Passed Assistant Surgeon," and "Surgeon," respectively, *Provided,* That not exceeding five promotions shall occur in either grade, except to fill vacancies, in any one calendar year.

SECTION 2. That original appointments shall be made to the grade of assistant dental surgeon, and the appointees must be citizens of the United States, between twenty-one and thirty years of age, graduates of standard dental colleges, of good moral character, of unquestionable professional repute, and shall be required to pass the usual physical examination and a professional examination which shall include tests of skill and proficiency in practical dentistry and the usual subjects of a standard dental college course: *Provided,* That there shall first be selected a member of the dental profession who is a citizen of the United States and a graduate of a standard dental college and whose aptitude and experience evidence eminent fitness for rendering expert assistance to the Surgeon-General in conducting the professional examinations and in organizing, equipping, viewing the reports and supervising the operations of the others, who shall first be appointed to the grade of dental surgeon: *Provided further,* That any appointment made under this act may be revoked or suspended by the President when, in his judgment the number of appointments exceed the requirements of the service of when, within three years from his appointment, an appointee discloses inaptitude or lack of professional fitness for the service

SENATE COMMITTEE ON NAVAL AFFAIRS.

To this Committee will be referred the "Proposed Substitute" for Senate Bill 2208: Eugene Hale, George C. Perkins, Thomas C. Platt, Boies Penrose, Jacob H. Gallinger, Julius C. Burrows, Charles Dick, Benjamin R. Tillman, Thomas S. Martin, Samuel D. McEnery, Joseph C. S. Blackburn.

HOUSE OF REPRESENTATIVES COMMITTEE ON NAVAL AFFAIRS.

To this Committee will be referred the "Proposed Substitute" for Senate Bill 2208: George Edmund Foss, Illinois; Henry C. Loudenslager, New Jersey; Thomas S. Butler, Pennsylvania; Sydney E. Mudd, Maryland; Robert G. Cousins, Iowa; Ernest W. Roberts, Massachusetts; Edward B. Vreeland, New York; George Alvin Loud, Michigan; Arthur L. Bates, Pennsylvania; George I. Lilley, Connecticut; W. Aubrey Thomas, Ohio; Albert F. Dawson, Iowa; Adolph Meyer, Louisiana; John F. Rixey, Virginia; W. W. Kitchin, North Carolina; Lemuel P. Padgett, Tennessee; Harvey C. Garber, Ohio; Alexander W. Gregg, Texas.

SENATE COMMITTEE ON MILITARY AFFAIRS.

In charge of Senate Bill 2355: Francis E. Warren, Nathan B. Scott, Joseph B. Foraker, Russel A. Alger, Henry Cabot Lodge, James A. Hemenway, Morgan A. Bulkeley, Edmund W. Pettus, Joseph C. S. Blackburn, Murphy J. Foster, Lee S. Overman, James P. Taliaferro.

HOUSE OF REPRESENTATIVES COMMITTEE ON MILITARY AFFAIRS.

In charge of House Bill 9737: John A. T. Hull, Iowa; John H. Ketcham, New York; Richard Wayne Parker, New Jersey; Adin B. Capron, Rhode Island; George W. Prince, Illinois; Elias S. Holliday, Indiana; H. Olin Young, Michigan; George R. Patterson Pennsylvania; Julius Kahn, California; Loren Fletcher, Minnesota; Jas M. Miller, Kansas; William Sulzer, New York; James Hay, Virginia; James L. Slayden, Texas; Robert F. Broussard, Louisiana; Joshua F. C. Talbott, Maryland; Ariosto A. Wiley, Alabama; Bird S. McGuire, Oklahoma.

OBITUARY

DR. CHARLES C. CHITTENDEN.

Dr. C. C. Chittenden, Madison Wis., one of the most prominent dentists in the United States, died at his home in Madison, Wis., December 15, 1905, at the age of sixty-three years.

Dr. Chittenden was born in Nuda, Livingston county, N. Y., May 10, 1842. Nelson Chittenden, father, went to Madison at an early day and engaged in the practice of dentistry. Charles was then a boy and as he grew to manhood studied dentistry in his father's office. In 1861 he enlisted in the Eleventh Wisconsin and served until 1863 when he was mustered out. During the time he was in the army he was a fifer.

With John Nichols, one of the youngest of Wisconsin's volunteers playing the drum he marched at the head of his regiment.

He was a year ago president of the National Dental Association, was president and chairman of the Committee on Colleges of the National Association of Dental Examiners, and for a dozen years was president of the Wisconsin State Board of Dental Examiners. He was one of the most popular citizens of the Wisconsin capital, a skilled musician and an active church man.

DR. WILLIAM VAN HON.

Dr. Van Hon was born at Mt. Pleasant, Iowa, April 20, 1870. Attended the schools of Mt. Pleasant and the Iowa Wesleyan University; graduated from the Northwestern Dental College, Chicago, Ill., in the class of 1897. He was a member of the Delta Sigma, Delta Fraternity, also a member of the Masonic Fraternity; being a member of Mt. Pleasant Lodge No. 8. A. F.

& A. M. Mt. Pleasant, Iowa. He was a member of the Episcopal Church, and the Fraternity of M. W. A. He died at Pulaski, Iowa, January 1, 1906.

After the graduation at the Northwestern Dental College; he located at Mt. Pleasant, Iowa, and practiced for a number of years, but on account of ill health gave up the practice of his profession and went to Elkhart, Indiana. His health being improved, he resumed the practice of dentistry again locating at Pulaski, Iowa. He married Miss Larue Payne, of Bloomfield, Iowa. Dr. Van Hon was a young man of exemplary character in every particular. He leaves a wife and daughter to mourn his untimely death, Also his parents, T. J. Von Hon and wife of this city. Mr. T. J. Von Hon being president of the First National Bank. Also a sister and a brother; Mr. Fred Van Hon being connected with the First National Bank. He was buried at Mt. Pleasant, on the 3rd, of January, 1906, by the Masonic Fraternity, and with full honors.

J. O. B.

SOCIETY

DENTAL EXHIBIT.

On March 27, 28, 29, 30, 1906, there will be held at The Auditorium, Chicago, the largest exhibit of dental goods and appliances ever attempted. There will be no papers, but experts in every line will give continuous demonstrations. No admission fees or dues. This is an exhibit by manufacturers for the dentist and all are invited to be present. Particulars in the advertising pages.

THE G. V. BLACK CLUB CLINIC.

The G. V. Black Dental Club of St. Paul, will hold its Annual Mid-winter Clinic at the old Capitol Building in St. Paul, on February 22,-23, 1906. An unusually interesting program is being arranged by the program committee. There will be all classes and kinds of dental operations, such as gold and amalgam fillings, porcelain and gold inlays and gold and porcelain crowns.

Such well known men as Drs. Searl, Clark, Beemer, Lewis, Moyer, Wells, Bond, James, Gallagher, Richardson, Conzett, Robinson, Pherrin, Crandall, Work and others will operate. Dr. Truman W. Brophy, of Chicago, will make a surgical operation. Essays will be read by Drs. G. V. Black, C. N. Johnson and T. W. Brophy, of Chicago, Alfred Owre, of Minneapolis, Minn., and Conzett, of Dubuque, Ia. There will be a number of table clinics of more than ordinary interest. Special attention has been given the exhibits.

Railroad rates—one and one-third fares plus 25 cents, certificate plan. The profession generally is invited to attend. For further information apply to,

R. B. Wilson, *Secy.*
St. Paul, Minn.

AFTERMATH

PERSONAL AND MISCELLANY.

Fined for Illegal Practice—R. Haas, San Pedro, California, was arrested and fined $50. for practicing dentistry without a license.

California State Board Examination—Out of forty-one applicants for certificates to practice dentistry in California, twenty were successful.

Disclaimer—On page 629 of the September, 1905 **Summary,** there are a few sentences ascribed to me, but I do not claim the authorship. Evidently faulty reporting—W. L. Fickes, Pittsburg, Pa.

Scandinavian-American Dental Association of Chicago—Officers elected were: President, Dr. C. E. Johnson; vice-president, Dr. O. M. Ulvestad; secretary and treasurer, Dr. John Nelson. Dr. O. T. Johnson, Dr. P. W. Thorelius and Dr. Maurice Schycker were elected directors.

Damages Awarded for Carelessness—Miss Mamie Meehan of St. Louis, was awarded $441 damages against Dr. E. C. Chase, by a jury in Justice O'Halloran's court December 19th. on account of alleged injuries to her tongue and jaw, inflicted by the dentist's assistant while pulling her tooth.

National Capital Dental Society—At the last meeting of this society officers were elected as follows: Dr. Starr Parsons, president; Dr. F. F. Daly, vice-president; Dr. C. W. Cuthbertson, recording secretary; Dr. W. B. Daly, corresponding secretary; Dr. Geo. S. Waldo, treasurer; Dr. Z. W. Alderman, librarian.

Burglaries—The office of Dr. S. C. Hoenef, of Oakland, Cal., was burglarized December 27th, and $20 in cash and gold and bridge-work to the amount of $300 taken. Many valuable instruments were left untouched. The office of Dr. Geo. T. Phillips, of Rutland, Vt., was entered December 24th, and a large quantity of artificial teeth taken. Other things of more value were left undisturbed.

D. H. Crouse, Dead—D. Howard Crouse, son of Dr. J. N. Crouse, Chicago, died in that city January 4, 1906, aged thirty-two years. Howard was well and favorably known in the dental profession. He was genial in disposition, ambitious and an indefatigable worker. He was manager of The Dental Protective Supply Company, and editor of The Dental Digest. We extend sincere sympathy to the bereaved family.

Fires—The building occupied by Dr. Housholder at Maxwell, Ia., was badly damaged by fire December, 18th. His loss was partially covered by insurance. Fire destroyed the office of Dr. Clarence A. Watts, of Des Moines, Ia., December 17th. The loss is estimated at $3,000. The Patterson Dental Company in the same building suffered a loss of $2,000. The office of Dr. C. P. Williams, of Terre Haute, Ind., was damaged by fire December 29th. Loss not estimated.

Deaths—Dr. C. P. Deming, of Ashland, Wis., died December 25th, of heart-failure. Dr. C. S. Beck, of Wilkesbarre, Pa., died December 24th, aged 54 years. Dr. D. W. Clancey, of Cincinnati, O., died December 21st, age 62 years. Dr. H. I. Swigert, of Watsonville, Cal., died December 25th. Dr. W. B. Woodward, of Los Angeles, Cal., Formerly of Peoria, Ill., died December 26th. Dr. C. E. Neighberger, McPherson, Kan., died January 2d, of heart disease, age 70 years.

Dentist's Fast Said to Have Caused His Death—Dr. Louis A. Melze, of Chicago, who five years ago by a long fast reduced his weight from 300 pounds to less than half that figure, is dead at his home as a result of neglecting to adhere to the regimen that had saved his life. He weighed 135 pounds when he was attacked by his last illness a few days ago and had maintained that weight with slight variations for five years.

The first step in the treatment involved fourteen days of absolute fasting. After securing his reduced weight he returned to the enjoyment of rich foods, his physician said, and that resulted fatally.

Marriages—Dr. Arthur G. Greene, and Miss Nellie Rowland, of Wichita, Ia., were married December 27th. Dr. Sidney G. Main, of Ishpeming, Mich., and Miss Maud E. Moore, of Valparaiso, Ind., were married December 28th. Dr. C. W. Scott, of Fruitvale, Cal., and Miss Katherine G. Kennedy, of San Francisco, were married December 20th. Dr. W. P. Robinson and Miss Clara Jackson, both of Paragould, Ark., were married December 28th. Dr. Albert J. Beatty, of Oklahoma City, Okla., and Miss Bella M. Fullerton, of Williamston, Del. Dr. Geo. M. Freeman, of Seattle, Wash., and Miss Geneva V. Lang, of Walla Walla, Wash., were married December 25th. Dr. F. C. Gehr, Green Bay, Wis., to Miss Agnes Foley, January, 1st.

Dentist Wins Suit—The jury in the United States court yesterday rendered a verdict in favor of the plaintiff in the suit brought by John B. Thompson, a Denver dentist, against the Fidelity Casualty company of New York and awarded him $1,009.44 damages. This is $465 less than the amount sued for.

Thompson brought the suit because the defendant company would not idemnify him in accordance with an accident policy he carried for an injury alleged to have been sustained to his eye. This injury, he claimed, was received in a peculiar manner. He alleged that while extracting teeth from a woman patient she coughed and expelled some poisonous matter, which flew into his eye. The insurance company in answer to the suit averred that the eye was diseased before the accident.

Alumini Society of the Angle School of Orthodontia—This new society was organized December 7, 1905, with officers as follows: President, Dr. Martin Dewey, Kansas City, Mo; secretary and treasurer, Dr. W. H. Bolton, Seattle, Wash; associate secretaries, Dr. A. W. Crosby, New London, Conn., for eastern section; Dr. E. S. McKay, St. Louis, Mo., for middle- west; Dr. J. D. McCoy, Los Angeles, Cal., for western section; Dr. T. M. Milan, Little Rock, Ark., southern section; Dr. F. L. Stanton, New York City, member executive committee. The object of this society is the advancement of orthodontia as a science, of its Alma Mater, and to further a more intimate relation with collateral sciences and arts. Meetings will be held annually.

Barnes Dental College Faculty Resign—On account of the refusal and alleged financial inability of the Board of Trustees of Barnes University, St. Louis, to furnish the Dental Department of that institution with demonstrators necessitated by the requirements of the Missouri State Board of Dental Examiners and the National Association of Dental Examiners and with the apparatus and equipment necessary for the proper and legal teaching of dentistry (such as electric current, nitro-oxide gas apparatus and etc.,) Doctors B. L. Thorpe (Dean), D. O. M. Le Cron (Vice-Dean), Richard Summa, Val H. Fredrichs, W. F. A. Schultz, C. O. Simpson (Secretary), E. E. Haverstick, E. P. Dameron and W. Y. Eckhart, of the Dental Faculty resigned December 16th, the resignation taking effect December 23, 1905.

Dentists Legislate Agaist Shoppers—As the result of a recent meeting of the Knox County Dental Society, the committee which was appointed to arrange a minimum price list for the Knox county dentists has completed its work and each member of the society has been presented with one of the lists. These lists are made especially to do away with the class of trade called "shoppers" who are the people that call on one dentist getting his prices, then going to another dentist for prices, etc. Each dentist will in the future follow the scale so that the shopper will get no better rates from one than from another. The minimum price list is a fair average of the prices for work that all the dentists that are members of the society have been using. They can use their discretion in prices they wish to charge above the schedule.

In the Toils for Taking Board Examination for Another Person—On a charge of conspiring with Philip Senior to obtain a State dental certificate for the latter, F. W. Herr, of Philadelphia, was held in $200 bail for Court, December 15th, by Magistrate Eisenbrown. Herr is a graduate of the Dental Department of the University of Pennsylvania, and successfully passed the examination of the State Dental Board in June last and obtained his certificate. Philip Senior, a companion of his, failed, however, and Herr was arrested while personating Senior at the examination.

The New Haven Dental Association—The officers elected for the coming year were: President, Dr. H. H. Spang; vice-president, Dr. E. S. Gaylord; secretary, E. Frank Corey; treasurer, Dr. T. R. Watson; finance committee, Dr. D. W. Johnston and Dr. T. J. Corbett.

Can One Tell the Age of a Child by Its Teeth?—In preparing a draft of the child labor law for the coming Iowa legislature, Commissioner Brigham has been unable to find a satisfactory method for certifying or ascertaining the age of children. He is seeking to avoid the use of affidavits by parents who might thus swear that their children are above 16 years of age to exempt them from the child labor law. It was at first thought to require legal proof of age from the official vital statistics, but this the commissioner found would be difficult even in Iowa, where records of births were kept with no regularity or system until a few years ago. In the case of children of foreign birth the records would generally be even more difficult to obtain. Accordingly someone has suggested to the labor commissioner that he investigate the plan of ascertaining the ages of children from their teeth. It has been proposed that a dentist be secured as an assistant to the state labor commissioner in the enforcement of this section of the child labor law. Commissioner Brigham is now seeking expert opinion on reliability of teeth as age indicators.

New Dental Law for Wyoming—The laws regulating the practice of dentistry in Wyoming and the rules af the Board are essentially as follows: An examination is required of all applicants and only holders of diplomas from reputable dental colleges are eligible to such examination. No dentist can begin the practice of his profession in this State without first making application for an examination to the Secretary of the Board, and at the same time paying the examination fee of twenty-five dollars and submitting his diploma for inspection. The applicant will then be examined at the next meeting of the Board, and if he passes a satisfactory examination a license will be issued to him. Until he receives this license he is not authorized to begin practice, and no license can be granted under the law except at a regular meeting of the Board. The possession of a diploma in itself gives no right to practice in this State. One examination is held annually the first week in September of each year. The time, date and place are set by the Board. All applications must be completed and in the hands of the Secretary thirty days prior to the time set by the Board for examinations to begin. Besides the written examinations, each applicant must come prepared to do any practical work which may be required.

Dr. Peter Appel, Jr., Cheyenne, is the secretary of the State Board of Dental Examiners.

Judge Wilkes on Dentists—The Supreme Court of Tennessee has decided that a dentist is not a mechanic in the meaning of the law, and therefore his instruments are not exempt from execution for debt. A majority of the court held that he was not a mechanic but a professional man. There has been no previous adjudication of the question by the courts of this State and the authorities of other States are divided. The court states that it "is of the opinion that a dentist is not a mechanic within the purview of the statute. While he does his work with his hands and instruments, still he fits himself, or should do so, for his work by a course of study of books and lectures, which entitles him to be classed as a professional man." The judgment of the lower court is reversed.

In one of his characteristically humorous opinions, Judge Wilkes dissents. Dissenting opinion follows:

"I do not concur in all respects with the opinion of the majority. While I agree that the dentist is a professional man, I see no good reason why he should not also be called a mechanic, if he so desires, so that he may have the benefit of the exemption laws. There is nothing dishonorable in the occupation of a mechanic.

"A dentist has all the tools that were ever used by any carpenter, and he uses them and uses them all at the same time. He has saws, and hammers, and picks, and pincers, and augurs, and braces, and chisels, and mallets; and if there was any other instrument ever invented or used in the days of the Inquisition, he has an improved pattern of it. He has his little buzz-saw, that, with its music, lulls the patient to sleep, while his drill is prospecting for some nerve that up to that time had been quiet and peaceable. Like a carpenter, he builds bridges, and makes excavations, and digs holes and fills them up again.

"I cannot conceive how anyone who has ever been under the treatment of a dentist, and survived, can ever afterwards doubt that he is both a mechanic and a laboring man. No man can produce the results he does except by hard work.

"It is said that his bills are made out for 'professional services', and that the amount of them ranks him among professional men, and not merely as a mechanic or laborer. There is great force in this suggestion; but we know that others besides professional men charge high for services. For instance, bank officials, railroad presidents, and presidents of life insurance companies—so that this is not a fair criterion and test.

"While he looks to me like a professional man, and I would not call him otherwise, still I am in favor of saying, at his special request, that he is a mechanic, so as to give him the benefit of the law. He certainly cannot support himself without his tools, nor can he practice his profession. All his science and theory can't either pull or plug a tooth."

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building Washington, D. C.

Recent Patents of Interest to Dentists:

802683—Dental swage, John R. Comins, Syracuse, N. Y.

802408—Cervix—clamp for use in dentistry, Wm. A. Rowe, Gloucester, Mass.

802711—Rubber dam sheeting, Wm. F. A. Schrader, Brooklyn, N. Y.

802483—Dental appliance, Bert G. Simmons, New Brunswick, N. J.

803045—Dentists' cervical clamp, Lisle H. Babcock, Canistee, N. Y.

803474—Dental applicator, James W. Dennis, Cincinnati, Ohio.

803475—Dental applicator, James W. Dennis, Cincinnati, Ohio.

802989—Dental instrument, Albert P. Johnstone, Anderson, S. C.

803198—Saliva-absorbing-roll holder and shield, Richard A. Sprake, Denver, Colo.

803995—Tooth-brush, Wm. S. Davenport, Paris, France.

804116—Artificial tooth for bridge-work, Harry B. Gregory, Newberry, Mich.

804200—Apparatus for the correction of irregular teeth, Varney E. Barnes, Cleveland, Ohio.

804211—Dental switchboard, Monroe M. Callender, San Francisco, Cal.

804229—Forceps and the like, Thomas C. Hutchinson, Decorah, Iowa.

805171—Artificial tooth, Emery L. Townsend, Los Angeles, Cal.

805733—Tooth-brush, Eduardo W. Key, Southwest City, Mo.

805974—Manufacture of roof dental plates, Peter J. Malone, Altoona, Pa.

806034—Artificial tooth fastening for bridge-work, Thomas H. Whiteside, Youngstown, Ohio.

806345—Suction attachment for dental plates, John A. Johnson, Middletown, Del.

806300—Dental ligature applier, James Sorenson, Neenah, Wis.

807620—Mercury and amalgam separator, Henry J. Horstmann, Fort Wayne, Ind.

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

GOLD INLAY.

BY ALDEN BUSH, D. D. S., COLUMBUS, OHIO.

Professor of Crown- and Bridge-work, Dental College Ohio Medical University.

Since the advent of modern porcelain and its almost universal recognition as a material par excellence for restoration of the anterior teeth, gold in the form of inlays has naturally been supplanted in its selection for use in this particular location and at present has its greatest range of usefulness confined more or less to the posterior teeth, where the requirements of durability and strength are considered paramount to the cosmetic.

Of the various processes of constructing gold inlays that have been devised in the past, and the methods that are now recognized as the methods of most commonly accepted practice, none offer a suitable scheme whereby tooth form or occlusal surfaces may be reproduced that will with any degree of certainity typify the natural teeth, and meet the exacting requirements of articulation and occlusion.

The importance of true occlusion as we understand it today in its intelligent application to all forms of tooth restoration, will be readily apparent as applicable and indispensable in gold inlay-occlusal restoration as well as in all forms of crown-work, where it has long been conceded that not only should normal occlusion be restored, but also the functional value of the cusps as well as they are concerned in articulation.

If these mechanical and artistic requirements are to be observed, the pre-requisites of certainty and accuracy can be best obtained by forming the occlusal portion directly from an imprint of the opposing teeth and in its proper relation to the matrix, and subsequently carving a form which complies with these requirements, including approximal contact, if involved, from which a suitable die may be obtained of fusible metal, and in which the entire exterior surface of the inlay may be given the desired form by swaging.

While the detail of such a procedure may probably entail a certain delicacy of manipulation and consume a little more time than some methods, *time* is not the only thing to be considered when quality and not quantity is the true criterion of professional ability and merit.

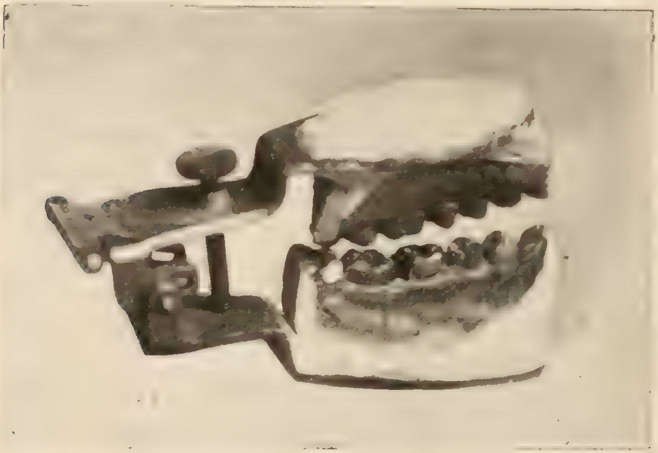


Fig. 1.

Fig 1 is from a case in practice and represents a mesio and disto occlusal cavity in a lower left, first molar with an inlay ready to set just as it came from the investment.

The manner of constructing gold inlays in the past has, I believe, been against their popular use in cases of extensive restoration for reason of the increased difficulty encountered in obtaining artistic results in proportion as the magnitude of the cavity increases, and is largely responsible for confining their use to comparatively small cavities and consigning the larger ones to crowning operations.

Teeth that have from the ravages of extensive decay reached that condition where the remaining walls are not sufficiently strong to render filling possible or advisable with assurance of any degree of permanency, may be restored to usefulness by a well constructed inlay of gold, thus deferring the crowning operation to some future time, and no doubt add many years to the aggregate longevity of the tooth.

Moreover, the presence of a well adapted inlay of gold is no doubt more conducive to the preservation of the normal conditions of the surrounding tissues than the most skilfully adapted crown.

The selection of cavities for gold inlays or rather to what extent teeth may be wasted away from the process of caries and still be repairable by gold inlays, and the preparation thereof, are two factors the consideration of which form the foundation of this type of restoration. But without dwelling upon a discussion of these fundamentals, I wish to enter at once upon the description of a method of making gold inlays, which, I believe, possesses many good points, by asserting first, that in preparing cavities for inlays of gold the principles of extension for prevention should be observed to the fullest extent, and second, that were gold inlays used more discriminately and gold crowns less indiscriminately the employment of the latter would be decreased fully fifty per cent.

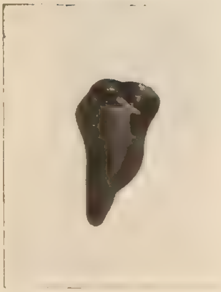


Fig. 2.

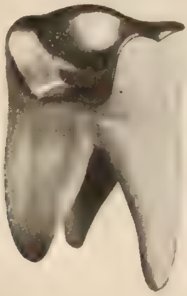


Fig. 3.

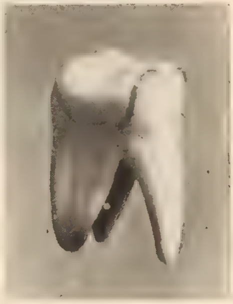


Fig. 4.

Fig. 2 shows a finished inlay restoring the mesio occlusal surface of a left upper third molar.

In presenting this method we will consider a mesio occlusal cavity in an upper first molar.

After preparing the cavity, take an accurate impression of it and secure a cement model with sufficient bulk to resist swaging.

In case the margins of the cavity extend to or within the gum margins, some material should be used in taking the impression which has sufficient resistance in itself, when plastic, to press or roll the gum tissues away from the cavity margins, thus obtaining a most valuable detail which is too often lost. Then, after obtaining the model, it should be trimmed with a file or sharp knife until the matrix can be swaged over the margins, at this location, with as much accuracy as over the more open parts.

The model thus obtained should be securely mounted upon the swaging block of any good swaging device and the matrix swaged of pure gold of suitable gauge.

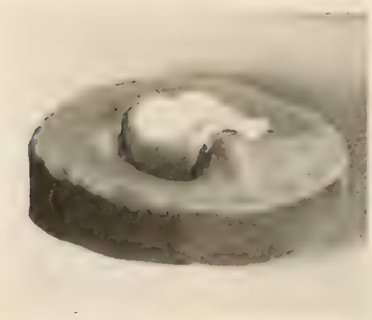


Fig 5

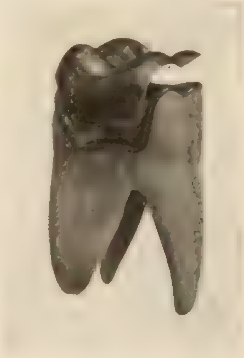


Fig. 6.

Less trouble will be encountered from distortion of the matrix in handling, which sometimes is so slight as to escape notice until after the damage is irreparable, the liability of the matrix to change form during subsequent operations of soldering and the tendancy of the solder, through shrinkage, to destroy detail, will be reduced to a minimum if the heaviest gauge of gold consistent with accuracy be used.

Thirty gauge will permit of perfect adaptation in the more open cavities and thirty-two or thirty-three in less extensive ones. When the initial swaging of the matrix has been completed, the surplus gold should be carefully trimmed from the margins, with curved pointed shears, leaving a sufficient quantity to extend well over the cavity margins. Then anneal, reswage and place into cavity in tooth and adapt perfectly to the floor of the cavity and especially to its margins. Now remove and anneal thoroughly and then return it to the cavity and complete the adaptation with some compressible substance which possesses sufficient resistance and elasticity to force the gold into perfect conformity with every portion of the cavity. (Fig. 3.)

With the matrix still in position in the cavity take an impression, allowing the matrix to be removed from the mouth with the impression.

Since an articulated model is required it is expedient and good practice, in the majority of cases of similiar nature, to take both of the impressions and bite in one operation with modeling compound. This method assures perfectly occluded

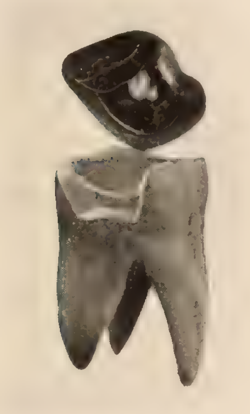


Fig. 7.

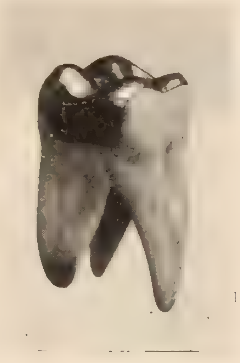


Fig. 8.

and articulated models, which, indeed, form the two most impotant requisites of accuracy in this work and the other parts of the model will be sufficiently accurate to meet the remaining requirements.

Having removed the impression with the matrix from the mouth, oil the model side of the matrix and fill perfectly with cement, pour remainder of impression with plaster of Paris together with the side which yields the occluding model, and mount on the articulator.

After the cement and plaster have crystallized, the modeling compound should be removed and the plaster teeth varnished to increase the hardness of their surfaces and thus prevent "chalking" with consequent loss of detail.

The case has now been transferred from the mouth to models mounted upon the articulator and as all subsequent operations of construction are to be performed on these models, accuracy of the inlay depends largely upon diligence and extreme carefulness in regards to preserving all the important details that are in any manner of consequence to the success of the inlay.

As the matrix was perfectly adapted to the cavity and the cement likewise perfectly conformed to the matrix, should the matrix become distorted in any subsequent operation it may be returned to the cement model and readapted with as much assurance of accuracy as though returned to the tooth itself.

Place a small "button" of moldine in the matrix and firmly close the articulator to secure the imprints of the occluding teeth. Then open the articulator and carve moldine into the desired form for the inlay, carefully observing the requirements of occlusion, articulation, approximal contact, if present, and typical tooth formation. (Fig 4.)

Carefully lift the matrix from its position on model without disturbing moldine and place it onto a bed of moldine in such a manner that the carved form stands in base relief with a slight showing of the margins of the matrix. (Fig. 5.)

Place the rubber ring and pour a counter-die of fusible metal. This should yield a counter-die giving an exact reproduction of the form carved in moldine with the boundaries of its margins the same as those of the matrix.

After permitting the counter-die to harden, it should be oiled perfectly to facilitate the operation of swaging and also to prevent contamination of the gold which might otherwise result from the adherance of small particles of die metal to its surface.

Pure gold plate should now be swaged into this counter-die in substantially the same manner as for swaging the matrix.

As the counter-die in which this portion of thd inlay is swaged is of a material that will safely sustain the stress of heavy swaging, without injury, twenty-eight gauge pure gold or even heavier, as the exigencies of the case permits, may be advantageously employed.*

---

*Swaging over dies made of fusible metal which have been constructed to meet the individual requirements of some special case, may be greatly facilitated and accomplished with more expediency, if, when casting the metal, a rubber ring be used of slightly smaller caliber than the steel sleeve which confines the swaging material and in which the plunger works. And the writer ventures to suggest that should the manufacturers of practical crown outfits and swaging devices include a ring of this sort in such outfits, their range of usefulness would be greatly increased.

When the swaging has been completed the surplus gold should be trimmed from the margins until when placed on the matrix in proper position on model it will bear the correct relation to it and permit the articulator to close and otherwise comply with the requirements demanded of it. (Fig. 6.)

Now remove the matrix from the model and perforate it with an aperture commensurate with the general shape and size of the matrix and sufficiently large to conveniently permit the subsequent operations of soldering when uniting the outer or shell portion to the matrix and also for reinforcement.

The matrix should then be returned to the model for correction, the shell portion adjusted upon and in proper relation to it, and sustained by a minute quantity of wax and invested for soldering.

The two parts may be united with twenty-two karat and reinforced with eighteen or twenty karat solder, but preferably they should be united by soldering with twenty-two plate which possesses the advantage of good color, softness and pliability. When this method is pursued, the relation of the two parts may be marked by first firmly holding the articulator close and then passing a sharp knife pointed instrument from one to the other in three or four different locations, thus making marks which serve as positive guides for obtaining and maintaining their correct relation to each other when removed from the model.

Having thus recorded their relation, they should be removed from the model and assembled according to the marks, and then carefully sustained with fine pointed pliers and soldered "free hand" with twenty-two karat plate. (Fig. 7.)

The inlay shell should now be returned to the model and proven for occlusion, articulation, fit and approximal contact, observing all discrepancies, if any, and carefully marking the necessary corrections at this time.

The inlay should then be removed and invested in an inverted position with the aperature in the matrix presenting upward, and the reinforcement made with twenty-two karat solder.

During this operation it is advisable to cover the exposed surface of the matrix with anti-flux to prevent solder from attaching to it.

This inlay may be finished and polished before setting, but to avoid doing injury to the margins, which are easily ruined, it is advisable to set the inlay immediately as it comes from the soldering operation and finished to the margins of the cavity a few days later with strips and discs in exactly the same manner as for gold fillings. (Fig. 8.)

While this method permits of unlimited mechanical effort and artistic possibilities, yet the advantage afforded by a pure gold surface is of no less importance, and should recommend it to your earnest consideration.

THE CARE OF THE TEETH DURING PREGNANCY.*

BY E. M. KETTIG, M. D., D. D. S., LOUISVILLE, KENTUCKY.

Professor of Prosthetic Dentistry and Crown- and Bridge-work,
Louisville Dental College.

There has been so little written on this subject that what I have to say is more from practical observations than from information found in our dental literature. And even this in a measure has been unsatisfactory and difficult, for the reason that many of our lady patients do not think it necessary to inform the dentist of the fact that gestation has taken place. Others wilfully conceal the fact, and even deny the same when suspected and questioned. Others again give the information cheerfully and voluntarily. So you see our patients are not as free in their confidence to the dentist, as they are to the physician and consequently we are handicapped in our observations. Of course after life of the fetus, and one can usually observe, or at least suspect, but our patients usually present for dental work before the first 4½ months, when in many cases, nothing is said by the patient, nor suspected by the dentist. Occasionally a young married woman will present for treatment of toothache without any apparent reason of why her tooth should ache, and searching for a cause, we often are only left to suspect that what she has is what is known as "nine months toothache," as she does not admit her condition for various social reasons.

It is my belief that at no time in the lives of our lady patients is it more imperative for their welfare, that the physician and dentist work together for their general building up, than during the period of gestation. I say this in view of my belief that modern civilization, and the present mode of living has done much to make woman the most frequent consultant of both physician and dentist.

---

*Read by invitation before the Bourbon County (Ky.) Medical Society, October, 1905.

Her natural weakness and susceptibility coupled with her folly in dress and her pride, make her an easy victim to pathological conditions. In the way of dress, the corset, which as it is being worn by many (to give a nice form) is directly responsible for many imperfections of the pelvic organs, and to such an extent is this carried on, that it is a great wonder that the pelvic organs attempt to perform their function at all, especially with women who try to conceal as long as possible the fact that they are about to become mothers, again on account of pathological conditions developing during pregnancy the physician is often forced to give strong drugs. Iron, acids, quinine, calomel and the like. The teeth about that time undergoing decay, breaking down before the ravages of the caries and the gums becoming sodden, swollen and spongy. The patient comes to the conclusion that the physician has unwisely prescribed medicine injurious to the teeth, and he is often blamed, and the assertion made, that a glass tube should have been used. The fact was overlooked, however by the patient, that the general condition was such as to demand these drugs, and the fact of the patient being in this pathological state, reflected back on the oral cavity by alteration of the secretions, and a consequent disordered condition of the teeth.

It is my belief that no medicine ever damaged anybody's teeth directly, but the fact that it was necessary for the patient to take medicine on account of systemic conditions, that affected the teeth. Again I believe the mouth at all times, unless kept in a perfectly sanitary state, to be a great culture media for germs of all varieties, especially at times when abnormal conditions prevail, as are said to exist during pregnancy.

Now that I have given a few of my reasons for presuming as I have, I will say a few words as to what I believe to be the best way to care for our patients' teeth, while they are in that condition.

When a patient applies for the services of a dentist, and he learns that gestation has taken place, the next thing to do is to ascertain the length of time, if possible, and especially if life has been felt.

I for one do not feel as much, the serious consequences that may result from dental operations after the first 4½ months. I would extract a tooth with impunity for a patient, after life has been felt, if it were in my judgment the best way to relieve suffering, whereas I would view gravely, the necessity of causing pain to a pregnant patient, in the earlier period. Maternal impressions have wrought wonders, and some monstrosities in the way of deformities have been brought into the world. Nervousness in pregnancy is characteristic, and a woman having a natural fear for the dentist, as many of them have, her anguish would be increased, should we subject her to much or prolonged pain about the mouth, and her nervous tension being already overwrought would allow maternal impressions to work possible harm to a developing fetus. I believe that if harm or deformity is to overtake the developing fetus, it is in embryo and not after form has been more nearly completed. During the first 4½ months, we should as dentists, treat this class of patients with great care, and approach them with much assurance that we are to give them little pain. We are only justified in relieveing pain by treatments, and not extraction except in rare cases. We should not subject a patient of this kind, to long sittings nor tiresome ordeals. We should by all means examine the oral secretions and prescribe alkaline washes, as I think acidity will be found in many cases; and as Black has said, "you may have acidity without caries, but never caries without acidity."

While we are on this subject of acidity, let me say it is my belief that acid conditions of the mouth will be found, not only during pregnancy but during menstrual periods, and the period of lactation.

Milk of magnesia is lauded much as a local remedy, and undoubtedly has considerable merit but we ought to reach farther than mere local treatment, and here is where our friend the physician comes in. I shall have something more to say on this point before the close of this paper.

That the teeth of pregnant women, need if anything, more care and attention during that period than any other in life, seems not to be doubted. It is well known to most women, that their teeth suffer at this time, and the old saying of "a tooth lost for every child," is well known to most of them. But I do not think the teeth would suffer much if acidity were carefully controlled, and their mouths kept sanitary.

It hardly seems probable that the fetus is nourished at the expense of the various organs of the mother, the teeth included. In other words, they do not become impoverished, through lack of nutrition at that time, but rather through altered secretions, in which they are continually bathed.

Now as regards the last half of gestation, our patients might stand dental operations, with less risk of harm to themselves or the fetus.

But the dentist should even then, exercise much care and mercy, and not perform operations that would take long nor be prostrating in their nature, never overlooking the hygiene of the mouth, and the correction of abnormal secretions.

Where systemic treatment is indicated, the physician should be consulted and the treatment similar to lythemia given. Litmus paper should be used by both physician and dentist, and when the blood of the patient seems poor, and the patient under tone, the physician and not the dentist should prescribe. No dentist is competent to prescribe constitutionally. Nor will a well-meaning dentist assume to prescribe for the general system, and should untoward results occur from such treatment, he can be held amenable for malpractice. He has enough to do, in his own field, but I think you will agree with me that the best and most lasting benefits to the patient are to be derived from joining together the professional skill of both physician and dentist.

REGULAR CONTRIBUTIONS

THE ART OF CAPPING PULPS.

BY G. W. CLAPP, D. D. S., OTTAWA, OHIO.

Some dentists are such believers in the practice of capping pulps that they cap practically every exposure which presents. These men honestly believe and loudly proclaim that they have capped from one hundred to one thousand pulps with only one or two failures, but it is often the case that if a list of such cappings were submitted to their competitors within range of one-half dozen miles, a large per cent. would be found to have resulted in failures and to have produced in the patient a strong distrust of capper's skill, and an unwillingness to again submit to his ministration.

Since the art of capping pulps is bound by laws no less strict and narrow than those governing the various other operations in dentistry, it may be proper to look carefully into this matter and see what pulps can be safely capped and what should be subjected to other treatment.

Much will depend upon the condition of the mouth. Much more will depend upon the length of time during which the pulp has been exposed.

The clear eyed dentist who looks not only to the present but to the future of his operations will hesitate long before he caps a pulp that has been exposed for even a week. He recognizes that from the date of the exposure and possibly for a time somwhat preceding it, the pulp has been exposed to the attack of infective agents of great virulence and that in the struggle for survival circulatory and tissue changes have occurred within the pulp, which alter or lower its vitality and which render it no longer normal. Not only this, but the chances for returning it to normal are slim. There are, of course, cases where such pulps are capped with success, just as, once in a while, some one lives to be a hundred years old, but the writer believes that the number of persons who live to become centenarians is fully as great as the per cent. of the exposures successfully capped.

There is however a very important, if somewhat narrow field, for capping pulps and within its limitation the operation is of great value.

Take first the case of children. The deciduous molars often present with small exposures. Pulpitis is present with its attendant suffering.

It may be one or more years before the bicuspid which is to take the place of this tooth is due to erupt. If the deciduous molars be removed at this time, it is certain that the teeth dîstal to the space which its removal will leave, will crowd forward. Permanent bicuspid will then be hindered in eruption or will force the anterior teeth to malposition. If the pulp be removed and the root filled, absorption of the deciduous root to permit the eruption of the bicuspid may be hindered or prevented whence trouble will follow.

If the exposure be not extensive and not too old, an effort should be made to reduce the pulpitis, cap the pulp and so place a non-conductive filling as not to cause the slightest pressure upon the pulp.

Such operations, if conducted with due regard for antisepsis are often very successful and sometimes preserve the deciduous tooth in place until it is time for the eruption of its successor.

In permanent teeth a somewhat extended observation and experience has led the writer to restrict the operation of pulp capping to those exposures which are of very recent date and limited area., and to reject it even under those conditions for anaemic and hysterical people, or where the mouth is foul. In anaemic people the circulation, upon which depends in no small degree the process of repair, is frequently unequal to the demands made upon it by pulp restoration. In hysterical people the nervous system is so unstable that it cannot be depended upon and is as apt to superinduce hyperæmia, stasis and suppuration as it is to second the dentist's efforts to restore the pulp to health. In mouths which do not receive daily care the infective agents are so numerous and virulent that during every instant of exposure the pulp is exposed to continuous attacks of such virulence that its restoration to normal is improbable. The above considerations have led the writer to reject pulp capping under such conditions. The elimination of cases covered by the above considerations practically defines the field in which pulp capping may be successfully conducted. In young people of good health and with cleanly mouths presenting small exposures of very recent date the operation is of great value since a tooth with a normal vital pulp is worth much more than a tooth from which the pulp has been removed.

The operation should be conducted with the greatest care for antisepsis and in the vast majority of cases the rubber dam is indispensable. When the tooth has been isolated and decay removed from the cavity the pulp should be subjected to the action of such antiseptics as are non-irritating and non-caustic. It is the writer's practice to then flow over the exposure and the area occupied by the pulp chamber a paste made by mixing Arnoda powder and fluid and allow it to dry at least in part. This is then covered with a layer of thin cement which is allowed to settle to place by its own weight, that is without pressure, since even the least pressure would induce pulpitis and defeat all efforts to save the pulp.

In many cases it is desirable to place a cement filling which requires no pressure or malleting. By the time this filling needs replacing the pulp will have become stable under its new conditions. Within these limits and governed by these procedures the writer has found the practice of pulp capping very satisfactory and a considerable number of teeth have been preserved in excellent condition which would otherwise have been devitalized. Failures have been rare.

There is another operation which does not properly come under the head of capping exposed pulps yet which may, with profit, be considered here since its importance is not appreciated by many members of the profession. It is the matter of protecting from thermal changes those pulps over which the layer of dentine is unbroken but thin. If a conductive or irritant filling be placed over a thinly covered pulp without an intermediate protection, pulpitis and its attendant evils will finally supervene. It is very easy, while the cavity is clean and dry, to place over the area occupied by the pulp chamber a drop of Arnoda paste and flow over it thin cement as in capping an exposure. The Arnoda paste will protect the pulp from irritants and the cement will protect it against thermal changes. The lack of these simple measures has caused the failure of many a filling otherwise excellent, while their practice has preserved many a piece of less mechanical excellence.

THE FALLACY OF "THE GREAT AMALGAM FALLACY."

BY J. P. ROOT, D. D .S., KANSAS CITY, MISSOURI.

In an issue of an eastern dental journal appeared the proceedings of a local dental society, which to me were very interesting not only on account of the subject, but also the reputation of the essayist, and the character of his audience. These facts led me to believe that amalgam, old plebian amalgam, honest old amalgam, was to be reintroduced to the public in a new form. We, the public, would have the opportunity of forgetting for a few moments "porcelain restoration," and learn new facts pertaining to one of the "lost arts" namely, how to properly use amalgam.

After reading the paper, and the discussions, then rereading to make certain I was not mistaken that such a conglomeration of statements and mis-statements, could emanate from such a distinguished body of men, who pose as writers and teachers, I was convinced of the necessity for having a Russian censorship to edit dental literature before it was published.

Men whose names are attached to an article, who have national reputations, should be made aware of the fact, that to the bulk of the readers they are not personally known; the general public has not come in personal contact with them, and does not realize they are nothing but common mortals, whose expertness with pen or pencil gives them an undeserved standing as teachers or writers, hence their remarks often cause disaster to the men who through ignorance follow their advice.

The essayist was attempting to prove something pertaining to amalgam, its advantages or disadvantages, it is difficult to decide which. One statement was: "Gold can be better adapted to rough margins than amalgam." This fact may be true, but proves nothing, and prevents no one from obtaining smooth margins if he so desires.

He stated a "divine truth" when he said: "Amalgam is a cheaper filling than gold, consequently neglected." He followed with another clincher by saying: "Not ten per cent. are properly inserted." From personal observation I should say this is not an exaggeration, although of course impossible to prove.

He follows, however, with a rudely exaggerated statement, when he says: "In simple cavities the actual time with gold is no greater than with amalgam, plus time required at second sitting for polishing." Either he is wonderfully expert with gold, or woefully lacking in manipulative ability in handling amalgam.

As no explanations followed the ensuing statement as to why he believes what he says, I would be charitable enough to say he had transposed the words gold and amalgam, if I did not know he, in this instance, practices what he preaches, also believe that with many other preachers he, or at least his followers, would be more blessed if he did not. He says: "To obtain the same effect with amalgam as is secured with gold, in the filling of crown cavities for children, requires greater destruction of tooth structure, weakening of walls, enlarging of cavities." Perhaps some one in the discussion may be able to prove him right, but to me the statement seems so ridiculous as to be unworthy of consideration, and is on a par with the following: "To prevent discoloration of tooth structure from amalgam, line cavity with a gold matrix." Now do you suppose the essayist has not heard of the wonderful discovery of "cement?" Nearly every dental dealer handles this useful article, and in my opinion a gold matrix as a lining for an amalgam filling would be as sane an act as to set a Logan crown with gold.

The essayist demonstrated the fact that he had level cranial spots when he said: "The day when all dentists will use the same alloy, in the same manner and in the same class of cavities, is far off. The remedy for any one practitioner is, however, within his own immediate grasp. Let him select one alloy and use no other whatever the temptation. In making such a choice, if the dentist be at the outset of his career, I would recommend some alloy that has been continuously on sale for a number of years rather than any of the newer products. I do not mean that these later-day preparations may not be good, but the older ones would not still be on the market had they not proven to be of value. Having made a choice, the dentist may soon familiarize himself with this one alloy as to be able to get the very best possible results from it." This advice proves he knows an essential aid towards making a perfect amalgam filling namely a good amalgam, and familiarity with its use, for it takes years to demonstrate whether any brand of amalgam is a success, for theoretical tests in steel tubes, showing how many tons pressure an amalgam will stand does not prove anything pertaining to its practical value, when in tooth structure.

The next mystic statement is rather obscure as to whether he advocates gold or amalgam in this class of cavities:

"Let me cite, as leading up to the purpose of experiments, a difficult yet common class of cavities found in every-day practice, and more often filled with amalgam than with gold. Imagine a case where the sixth-year molar has a large disto-approximal cavity, while the adjacent twelfth-year molar has a similarly large mesio-approximal cavity, both involving the morsal surfaces. Preparation of these cavities, so far as removal of carious matter is concerned, discloses the fact that both pulps may be saved alive, but that in both instances the gingival margins must lie at or under the gum. Of course, every gentleman present makes it a practice to properly fill these teeth, even when using amalgam. But let us discuss the work of men who are not present,—those who get small and stated fees for amalgam.

"Different procedures maintain. Some fill both teeth at the same sitting. Of these, a great many polish only the visible and consequently accessible parts of the filling at the second sitting. Still fewer pass a narrow strip of sand-paper along the gingival margins, and polish them in that way, the moisture, blood, and debris, of course, being no hinderance. Another few may next use a steel separator and obtain enough space to polish the contact points, in which case, even though the fillings be polished, they lose their contact.

"Following another method, we have those who fill one cavity at the first sitting and polish it at the next, before filling the second. This is better, but the same dilemma maintains when the polishing of the last filling is attempted. Either the contact point remains unpolished, or else it is lost.

"Of course, the proper method is familiar to all. The teeth must be wedged apart,—one sitting; one tooth filled,—two sittings; this one polished and the other filled,—three sittings; the second filling polished and the teeth allowed to fall back again,—

four sittings. But even with amalgam this kind of work cannot be done for small fees, and that is why it is done so seldom."

It is immaterial as to whether he advocates gold or amalgam in this class, for no one filling material is indicated in any one class of cavities, existing conditions must be the guide, such as density of tooth structure, size of cavity, or predisposition for recurrence of decay. But his ending was sublime compared to other statements made, when he says: "Of course the proper method is familiar to all. Teeth wedged apart,—one sitting; one tooth filled,—two sittings; this one polished other filled etc." He neglected mentioning two absolute essentials for perfect fillings of this class, and when I say absolute, I mean all the word can express, he failed to mention a matrix, and without it, it is an utter impossibility for any man, or even woman, to insert a perfect amalgam filling in an approximal cavity in bicuspid or molar, because without its use you can not use pressure, and without pressure you can not insert a perfect or anyways resembling a perfect amalgam filling. Also it is difficult to restore the proper contour or point of contact to the tooth without its use, two other absolute essentials. One other important feature for perfection is a lining of cement to strengthen the tooth, to prevent thermal changes, and to prevent discoloration of tooth structure and any amalgam filling resulting in a discolored tooth does not even resemble perfection.

The objections raised to amalgam fillings, are that they turn black, they discolor the tooth or they shrink or expand. I will admit that most good amalgams turn dark, but if a good amalgam is properly used it will not shrink or expand or discolor the tooth. While to avoid any unnecessary argument I will admit the superiority of a gold filling or a porcelain restoration, yet the greater per cent. of the people can not afford to pay the prices demanded for these, so the use of amalgam must continue, and why? because you must insert a three dollar amalgam filling instead of a porcelain restoration for fifteen or twenty dollars. Why not take the same pains with one as the other? The benefit to the patient, aside from the aesthetic, will be as great in one case as the other, not, however, if you follow the advice of the eminent gentlemen present who in discussion said: "With two approximal cavities in adjoining teeth, I fill both as if one; subsequently separating them with a thin spatula, first squeezing amalgam dry with fingers." He did have the grace to say:

"Perhaps this is a slovenly method." His last statement was an indisputable fact, and was one of the primary causes for my criticism of the men who make such unwise statements, for if such advice was followed, the results would cause anyone to condemn the use of amalgam at any time. The gentlemen making the remark, displayed great ignorance pertaining to the use of amalgam, yet if he does as he advocates, and does it well, he probably would make a good sculptor. Think of the time and expertness required to fill two large adjoining approximal cavities in two molars, by this method, for the cavities, the interproximal space and any existing pockets would be filled with a mass of amalgam, probably a mushy mass, as he removed the surplus mercury between his fingers. Next with a thin spatula he whittled away the surplus and of course restored the proper contour and point of contact. He could have hastened the operation by blowing into proximal space, and thus getting rid of surplus amalgam, but suppose he enjoyed whittling.

In further discussion he was followed by another eminent teacher and writer who said:

"There is room for discussion, whether or not the finish for which he contends is really of practical value, or is merely an embellishment. That it is not generally done goes without saying, some, indeed, contending that the after-polishing is wholly unnecessary and a waste of time. If this is the case, are we justified in putting the patient to the inconvenience and expense which it entails? Are we profitably using our own time and talent? Polishing is necessary when gold is used, because the outer surface of a gold filling is not only rough as left by the plugger, but it consists of imperfectly packed gold which must be removed. Furthermore, in many cases where amalgam proves of much value, the overlapping edges at the cervical border pressing down to the gum tissue, and the large contact surface any attempt to polish would remove, are essential to its best service. This is the case where there has been extensive gum recession and where very large interdental spaces exist. The amalgam, filling this space, tends to cleanliness, and its close adaptation to the surface of the adjoining tooth, where the teeth have become loosened by loss of tooth-supporting tissue, is as important to the patient's comfortable use of the tooth as is its occluding the cavity of decay. The use of amalgam in this way has been criticised as careless and slovenly. When purposely done, with a definite ob-

ject in view, it is not so; it is then a legitimate and commendable practice. The mere fact that amalgam fillings, thousands of them, have done all the service a filling can do with its contact surface unpolished is very good evidence that it is not a prime essential. There is room here for profitable discussion."

"Ye Gods and little fishes." To think of any body of sane men having a *profitable* discussion, whether to pack too approximal cavities including intervening proximal space with amalgam, and then debate whether to whittle out surplus amalgam, or leave it with a *"Definite Idea in view."* The mystery surrounding this statement is what does the "definite idea in view" consist of? It would appear to me as if meaning simply the short space of time ere the teeth would be lost, and is on a par with the results if a prize fighter should land a solar plexus blow on your plexus, the result would be the same whether he had a "definite idea in view" or was knocking your plexus about "just to be knocking."

My object in writing this paper is not to knock, or abuse anyone, but to show the lamentable ignorance existing in "High Places" pertaining to the use of this most excellent tooth preserver, and the unfortunate error of allowing such statements to get into print, where their influence can be felt. My opinion of amalgam is here expressed, copied from an article entitled, "Fallacies" which was written by your humble servant and printed in *"The Western Dental Journal"* some months ago:

'Tis a fallacy to suppose, as many of you do, that the only filling material really permissible in your office is gold; that when you purchase your gold by the ounce and amalgam by the pennyweight, you are a success. We all admit that from an artistic standpoint it is more satisfactory to use gold, but artistic results should be the secondary condition considered; comfort and utility first. You eminent dentists who relegate the use of amalgam to the country dentists or to your Cheap John city quacks, in most instances are able to insert a most beautiful aristic gold filling with all details pertaining to extension for prevention, point of contact, etc., admirably carried to perfection.

"And it is not a fallacy to say in a great many cases they are failures, when if you had used judgment accompanied with amalgam, they would have been a joy and comfort to your patient, if not to yourself. This plebian combination of metals commonly known as amalgam is as suitable for the rich as well

as the poor, and if you could lose your aversion for it sufficiently to allow you to learn to handle it with the same care and love you do gold, and you could forget the fallacy of contraction and expansion and tons pressure it can stand and realize that when properly used—mind I say properly—its only drawback is its color, not the color it may give the tooth, for, if properly inserted, it will not discolor any tooth."

INTELLECTUAL DENTAL PROGRESS NEEDED.

BY W. T. M'LEAN, A. M., M. D., D. D. S., CINCINNATI, OHIO.

I have no doubt the members of the profession have sought gold too ardently, and do so still, but we must not suffer that passion to conceal from us the fact that in all the many civilized decades, with which our profession has been identified, these same members have with equal zeal asked the universe to tell its secrets. We have not only been a progressive profession, but we have been rather painstaking and have studied hard the lessons on the pages of science, and art, and history. If, when you look out and see thousands rushing to and fro for money, you feel that man is an idolater, you can partly dispel the thought if you attempt to count the thousands who, in that very hour are pouring over books, or who in meditation are seeking the laws of nature and science which apply to dentistry. Thousands of our profession in these days are seeking facts of science and art relative to our specialty. In order to be, ourselves, properly encouraged or entered along the progressive, scientific, and artistic paths, we must make no wrong estimate of the influences which are impelling a few at least of our confreres who are really worshiping gold, and despairing of all else, or we, too, may soon degrade ourselves by bowing at the same altar. It is really necessary for us to always be just and liberal, we must be fully conscious of the fact that there are many hurrying along through places of barter, intent on more gold, but so must we be conscious of the fact that there are many dentists who remain neutral, and when opportunity occurs unsurp from others their experience, and absorb from them what they can of our literature and art. You saw or heard of the fortune, you read the will of the millionaire when he died, but did you with equal zeal mark how negligent many are of not attending the annual meeting of the various dental societies? When the Chaldean men of science attempted to learn the truths of the heavens, they were compelled to look with the eye only. All they had was the eye and a loving heart. They filled seventy volumes with their imperfect studies. The reader, be he ever so industrious, can not keep pace with the issue of scientific dental articles, and money itself is alarmed lest the new thoughts and invention of tomorrow, may overthrow its investment of yesterday. Stocks tremble at the advance of intellect, and the glory of this intellectual passion may be found in the fact that it is not confined to a group of scholars, but like liberty and prosperity it has passed over to the many. Not all the multitude of the profession are exclusive gold seekers, but on the contrary they are scientific gold manipulators, and are seeking after truths, being lovers of scientific dental facts more than money and are standing by the fountains of knowledge with no thought of ever being financially wealthy. Professional ability as applied to dentistry, with the power to think, and beneficially apply such thoughts, and artistically manipulate material adapted to dental uses, and to enjoy the thoughts of munificience and improvement when advanced by others, have long since transformed a cottage into a palace, as it were. Thus, although many of our profession seek too fondly the money prize, he will do great injustice to our profession who fails to appreciate what an immense motive of life this pursuit of knowledge and ability has always been, and still remains, Therefore with that encouragement of resting in the anticipation of being well remunerated for any service rendered, the practitioner of dentistry should realize that progress can only be encouraged among the members of the dental profession by their receiving just remuneration for the time and energy when applied to those whom they are sufficiently proficient to serve.

Intelligent dental progress is needed not only among many dental practitioners, but among the greater mass of needy dental patients. Some method should be formulated to interest patients so that they may be able to select those who are qualified to care for their teeth. Instruction should be tendered them regarding correct service so that they could without loss preserve their teeth and not be inveigled into having unprincipled charlatans serve them. The profession has stood by and watched the many devices utilized by the charlatans to attract patronage and there being so many gullable people they accordingly thrive like vultures. Their methods reflect upon the entire dental profession and hence the results are such as to place the dentist on a par with itinerant merchants of many classes. Advertising dental fees, making dentures, crowns, bridges, etc., for specific prices, is analogous to the physician advertising scarlet fever treated for $3.00. Typhoid for $5.00. Accouchement $5.00 guaranteeing male or female as the patient desires. Illustrations might be sighted to no end, but the ridiculous is at this point sufficient, at least to cause some reflection. Dental progress is needed among the laity, and it is needed badly, and in order to advance our profession so that the members may affiliate equally with those of other professions, some means must be devised to elevate or lift it out of the commercial stata into which it is rapidly falling.

MISTAKES OF A COUNTRY DENTIST.*

BY R. D. WALLACE, D. D. S., SCIO, OHIO.

EXTRACTS FROM THE DIARY OF JACK RAGGLES, HICKORY CORNERS.

Entry 2739. February 27, 1905.

Received letter from the corresponding secretary of Northern Ohio Dental Association requesting me to prepare a paper on the "Mistakes of a Country Dentist." Not wishing to ruin my hat I took it off while I allowed my head to swell to abnormal proportions, and wrote a nice little letter of acceptance. I've made enough mistakes myself to fill a volume. This will be a great opportunity to—to—(that sentence isn't finished).

Entry 2781.

Here it's April 10th, and not a word written on my paper. Last night I got everything ready for the spirit to move, but she wouldn't turn a wheel. Wrote the title and then tried to think of my mistakes, but I couldn't think of one that would be fit to tell.

Then a man naturally shrinks from knowingly parading his imperfections before the public. He likes to show his good qualities. Guess I'll tell on the other fellow. Even that seems sort of sneaking. Well, let's see. I just can't think of a single thing except the old saying, "Don't do anything today that you can put off until tomorrow."

---

*Read before the Northern Ohio Dental Association, June, 1905.

Entry 2782.

"The dog returns to its vomit." The greatest mistake, the daddy of all, is that I undertook this contract. Don't see why I'm such a "tarnal fool." I'm all out of fix, anyway. It isn't right to get discouraged, but we all do things we know are wrong, and then offer a second-class excuse for the offense. Confound a little two-cent country town, anyway. Nobody appreciates what you do for them and everyone wants to run your business for you.

The Ladies' Aid (Gossip) Society holds secret sessions over back-yard fences and you can't even scratch but some one reports you. Talk about a $10,000 practice! You would come nearer the truth by saying a 10,000-cent one. I'm going to leave this place at the very first opportunity—sell out to the very first sucker who will bite, and go to Borio Booly Gaw. Mistakes, as Josiah Allen says, "The whole dummed thing is a mistake"—country dentists—remnants of the lost tribe of Israel.

Entry 2783.

You can never tell what a day may bring forth. This morning my wife gave me one of her after-breakfast talks, for which she is noted. She said, as she said oft' before, that I needed a change. This place and people were just as good as other places, but that I had stayed too long without a rest.

"Only been out of that old office thirty-three days in ten years, and it has come to the time you have got to get out. You are getting so queer and cranky the children and I can't hardly live with you."

"All right, Matilda Jane Raggles, if it will make *you* feel any better, I go."

"I want you to go, for it will do you good. Worlds of good."

"All right, Matilda, I'll go to Canada and I'll never return."

"I'll tell you where to go. Go down and visit Doctor Murphy. You have always been going for ten years and you never have gone. Now is the time to go. I'll help you get ready."

"Oh, I can't go down to visit Bill now. I don't feel like it."

"Well, you will never feel like it. You have just got to go."

I went down to the P. O. and got the mail and said to myself, No, I'll not go, now, but when I came back Matilda had my old carpet-bag packed—and—and—

Well, that's how I came to visit Bill. But before I left I stopped at Mr. Brown's real estate office and told him to write up my home and office, send me a copy as soon as possible to Jonesville, care of Doctor Murphy, and if it was O. K. would return it with instructions to sell.

I also went by my office and tacked up a lying card on the door, "Called out of town," when I was going to see Bill. Bill, how well I remember him. He was the jolliest fellow of our class. He didn't have a care, for Bill's bills were paid by Bill's Uncle Bill.

When he graduated, Uncle Bill bought him a practice and equipment in the little home town of Jonesville, where he could watch him. Bill was as mad as a wet hen. Said he didn't want to work for the heathen. Didn't want to be buried in the country and forgotten, where the grass and weeds of summer and the chilling snows of winter vie with each other in obliterating all traces of his lonely grave.

But Uncle Bill said: "Young man, you get a few years' practical experience and then talk of locating in a city. You will have to learn to walk before you run."

So Bill located in Jonesville and the last time I heard from him he was making $400 per month—getting rich.

When the train pulled into Samantha Allen's town, I had no trouble finding Bill's office, for every man, woman and child knew Doctor Murphy. Office and residence opposite Hennegan's shoeshop and the Widow Brown's grocery. The first thing that attracted my attention was Bill's sign—a plain pine board with the unvarnished "Doctor Murphy." The M. D., D. D. S., were conspicuous by their absence, and Bill was such a stickler for titles.

I stepped into the office quietly so as to surprise Bill, but I was disappointed. Bill, my ideal, my cherished Bill, absent, and his office—words cannot picture or brush portray the awfulness of the place.

While I was debating what to do and making mental note of everything in sight, I heard a slight noise behind and turning quickly I spied a lantern-jawed sort of a woman dressed in a red calico wrapper, sleeves rolled up as far as she could get them, displaying a pair of large, bony arms, a man's straw hat was on her head and a broom in her hand—looking through me with a pair of cold, cruel eyes. Then she addressed me in even colder tones.

"Say, Mister, what do you want, anyway? I've been watching you."

"Beg pardon, but I would like to see the dentist—that is, William McDougal Murphy, M. D., D. D. S., a graduate of the Cogswell Dental College."

"Is it important?"

"Yes, Madam; very important."

"Well, you sit down and I'll call him."

She left, and I wondered why Bill kept such saucy and slovenly servants. Presently I heard her call: "Bill, hey Bill; come up right away. There is some sort of an inspector or detective in the office; he is looking things over very carefully. I'll watch him until you come; now, hurry."

I didn't feel very comfortable. I didn't know what else she might do, and I wished also that Bill would hurry. Presently Bill came in, or rather the ghost of the Bill I knew. When he saw me his eyes got as big as saucers.

"Great bloomin' babies, Jack, where did you drop from?"

"Just came in on that old Jerkwater railroad that has a hen-coop for a station."

"Oh, I see; you got in on the U. V. W. Now, if you had come in on the X. Y. Z., you would have struck the better end of town."

"Well, I thought I would drop off and see you a little bit."

"Well, I'm mighty glad you did. But why didn't you send us word? We would have fixed things up and showed you a good time."

"Well, to tell the truth, Bill, I didn't know it in time, or I might have dropped you a card, but I thought I would just like to drop in like I used to when we were in college."

"Well, I'm just as glad to see you, Jack, only things are pretty much out of fix. We have been cleaning house and haven't got things fixed up yet. Now, if you will excuse me a minute," and Bill made a flying trip to the kitchen. He came back with a worried look on his face, saying Molly would be in in a little bit. But it was several bits before she arrived, and when she did, it dawned upon me why Bill kept such saucy servants, for I recognized the lantern-jaw. She had mellowed down the eyes with a shirt-waist suit, but she couldn't remedy the jaw.

Bill introduced us in his old, graceful way, and she excused herself as soon as possible, saying she would look after supper.

Bill says, ''What would you like to have, Jack? Sing her out just like you used to when we were in college, and if she's in town, we'll have her.''

''Oh, don't go to any trouble for me. *I'm no hungry.* Just shove on an extra plate and we will have pot-luck with the dentist.''

It seemed only a few minutes until we were called down to supper. It was a dandy supper, and I would have given a good bit if I hadn't told that lie about not being hungry.

After supper, Bill hitched up his horse to the rubber-tired buggy and we took a drive over town. I discovered Bill knew more about horses than dentistry. Said he had owned several horses since he graduated. Talked stuff I didn't understand; didn't know there was so much horse.

I also discovered that the $400 per month were made on the race-course and not in the dental office. Discovered that Bill was very popular, especially with the horse contingent of the town. It was, ''Hello, Doc., how's she stepping?'' ''Hello, Doc., this, and hello, Doc., that.'' When we got back it was late and I was tired, so retired.

After ham and eggs the next morning, we took another drive and talked more horse. When we came back Mrs. Murphy had things cleaned up half-way decent.

A lady came in; she wanted a tooth examined. Bill laid his cigar on the edge of the cabinet and examined the case without washing his hands since he put the horse away. Didn't have any clean napkins, or dirty ones, for that matter —think that napkins and Bill had cut acquaintance long ago, and while I was thinking about it, I heard him say, ''The only thing is to yank her out,'' and he reached up on the wall, where he kept a display-rack, like a butcher-shop, and took down a pair of forceps, looked at each as if undecided which pair to use, and approached his victim, and a lively tussle en-sued. I can hear that blood-curdling yell yet.

After she left, I asked Bill why he had extracted that tooth.

"Why? She wouldn't appreciate it if you did treat it, and besides I haven't time to monkey with treatments."

"Don't you treat teeth?"

"Not many. I tell you, Jack, it don't pay to treat teeth for country Jays. They howl simply getting them pulled, let alone paying for treatments."

"Yes, I can answer for one howl, anyway."

"That's all right, Jack, but you don't know anything about these snipper-snappers. The proper thing is to yank her out and make a plate. My practice is mostly confined to extracting, and fitting plates."

"Well, we find men who have taken up prosthesis as a specialty, but I didn't expect to find one in Jonesville. Suppose you have had quite a little experience making plates?"

"Not very much. I simply take the impression and bite, and fire her off to Chicago. I haven't made a plate for six years, and don't ever expect to make another."

"Why, Bill Murphy, I'm surprised that you would patronize the false-teeth manufacturing plants."

"Well, I didn't think it would come to this, either, but what's the use casting your pearls before the swine? This grade of work is good enough for the kind of Jays I have to contend with—they are greener than the dickens and dumber than the ox. Make them a plate with little white teeth, and a gold crown in front like a beer sign, and they are tickled to death."

"Bill, I think you have made a serious mistake. Now, if some one would open up an office across the street, put in the finest up-to-date city equipment, everything that a first-class office requires, and the dentist capable of performing first-class operations by the latest approved methods, don't you think it would pay?"

"Pay? Yes, it would pay big by being sold for junk and the money used to send the dentist down to Columbus, where they keep lunatics."

"Well, that's where you are mistaken, in my opinion, for I know a man who did just such a thing in a little town of 800 and where appointments run from a month to six weeks ahead all the time.

"It is well to remember 'That the man who can write a better book, paint a better picture, sing a better song or make a better mouse-trap, though his hut be located in the forest, the world will make a beaten path to his door.' "

"That's all right, but the fellow hadn't heard about Jonesville when he said that. You have to scheme and pinch if you practice dentistry here, and hope to come out even."

"Why don't you write up some of your schemes for the journals and enlighten some of us mortals?"

"The journals are nothing but an advertising scheme. The last time I read a journal I saw an article on 'Nerve Lesions, their Etiology from a Scientific Point of View,' by J. Leroy Skuffenhopper, M. S., M. D., L. D. S., D. D. S., Surgeon to the P., C., C. & St. L. R. R., Oral Surgeon to the Presbyterian Hospital, Consulting Surgeon to St. Caleb's Hospital, Lecturer to the Home of Nervous Prostrationists, and he was something else—I don't remember what it was. But by the time I had fully digested who and what he was, I was so tired I couldn't enjoy the article.

"It was just a scheme to advertise and he had just written a little postscript article in order to get in under the code, and pose as a great man. It so disgusted me that I quit taking the journals and had my titles taken off my sign and was tempted to have it plain Bill Murphy. The title 'professor' used to stand high on honor's roll, but since every little two-cent country school teacher claims the title, it has fallen into disuse and great men prefer to be called Mr.

"It's all bosh, Jack, bosh. Life ain't worth the living. Wish I could drop out of it all. You see, I didn't want to locate here, and the result is, I've simply gone to the dogs. The creature of circumstances and those circumstances of the unfavorable sort. There are times when I seem to feel the presence of a phantom form which beckons me to higher and better things, but scarcely is its presence felt until some ruthless hand thrusts it aside and reminds you that this is earth and you are Bill Murphy, the country dentist of Jonesville.

"The dental colleges are turning out hosts of new dentists every spring, who haven't any regard for the code of ethics, and they start an advertising office right under your nose and sap the life-blood out of you.

"What else can you do but practice their methods and use the same schemes? Quack with the quacks, or be driven out of the profession. If there isn't something done to remedy this evil, there won't be a professional man in practice in five years. It's enough to drive a man to drink."

"Well, I'll agree with you in the advertising business. There are Brown and Smith of our old class, who have been forced to advertise. Cutting down perfect teeth and making crowns. Last week I received a letter from Brown, saying, "Funeral in family to-day. Just buried my conscience."

"There's the mail, Jack. I'm expecting a plate from Chicago, so let's go up to the office."

Well, I received a letter from my real estate man, inclosing a description of my home and office and practice. I read it again. It was an ideal place. Strange, I had never looked at it that way before. It was just the kind of a home, office and practice I had always wanted. Sell?—I guess not. Looking further, found note, hastily written, "Have buyer at $3,800. Telegraph instructions."

Had intended to stay a week with Bill, but took the next train home. Bill was furious, but I could not afford to lose that home, and besides I had had my visit, and I didn't like Bill's wife. I was ready to go to work again. Seemed like I had been gone a month. When I got home, Mrs. Raggles had a lunch ready. She said: "I knew you would be home on No. 7. How is the Doctor?"

"Wrecked."

"How?"

"Run against a circumstance."

"That's certainly very clear and concise."

"Well, you see, it's this way: Bill has always been bossed by some one. Uncle Bill bossed. Then he picked Bill a wife whose only redeeming features were coin and a good cook, and she kept the coin and now rules Bill with a rod of iron. Lastly, but not least, fast horses."

Entry 2785.

Well, I've had my vacation and my paper for the Association is still staring me in the face. I would give most anything if I hadn't promised to write it. Guess I'll be ill and not attend.

Entry 2786.

Received letter from the corresponding secretary saying that Doctor Binzley, Doctor Renkenberger, Doctor Buzzell and Doctor Barnes would discuss my paper. Isn't that a stunner? Some one has got to put a twitch on that secretary. The very idea of City Dads to discuss my paper. They won't know anything about it if I do write it; they won't understand—they can't, for they are not in sympathy with country dentists. I'll just look over my diary and pick out a few points, and then let them discuss them and perhaps I'll get out of this scrape all right. At any rate, I'll not get into it again.

Here are five points apiece:

First: We all make mistakes, but don't like to admit them.

Second: Harsh critics on the other fellow.

Third: Procrastination.

Fourth: Dissatisfaction.

Fifth: Staying too close to business.

Sixth: Mistake to locate in home town, if a small one.

Seventh: Office in residence.

Eighth: Leaving your office all muddled up.

Ninth: Giving your profession second place.

Tenth: Senseless extraction of good teeth.

Eleventh: Gaudy display of gold crowns.

Twelfth: Patronizing the Iky Ikenstein dental laboratory companies.

Thirteenth: Mistake to think the country people aren't as good as city folks.

Fourteenth: Mutilation of good teeth.

Fifteenth: Using little white gum-section teeth.

Sixteenth: Cheap operating.

Seventeenth: Failure to read journals and attend associations.

Eighteenth: Good men being forced to adopt dental parlor methods.

Nineteenth: Mistake to think country people won't appreciate a first-class office, and a first-class dentist using up-to-date methods, and

Twentieth: The mistake of our lives—Forgetting the chief end of man.

TEACHING ORAL HYGIENE IN THE PUBLIC SCHOOLS.*

BY W. O. TALBOT, D. D. S., BILOXI, MISSISSIPPI.

The subject of oral hygiene now ranks among the first in the minds of the dental profession, for in unhygienic conditions mouths become diseased and the teeth decay. Palliative and reparative treatment only give temporary relief and we see the most perfect operations in dentistry fail and go to nought as the teeth are lost from disease caused largely by neglect in keeping the mouth clean. If the agonies of odontalgia are to become a rare affliction, if dental operations are to be as permanent as the scientific correctness of their performance now justifies, if the natural teeth of the civilized people are to be preserved in a condition to perform their most important function, mastication, the hygiene of their mouths must be greatly improved. To meet these requirements the mouth must receive a careful personal attention throughout the life of the individual. Cleaning the mouth should be made a part of the daily toilet, to be observed as strictly as the care of any other part of the body. The people as a whole do not know this. They must be taught. To teach a nation, you must teach its children. The public school is the best place to teach people simple truths that every one should know, and to force the beginning of a practice of things that every one must do.

The dental profession has largely awakened to the necessity of oral prophylaxis, and that it is obtained only through the observance of the laws of hygiene. Papers read before the various dental societies of this country during the last seven years, together with the actions and the discussions thereon have proved most conclusively that the dental profession in America believes that oral hygiene should be taught in the public schools of the country.

The medical profession has observed in unhygienic and toothless mouths the cause of many of the disorders of the digestive tract; and it is often demanded that such mouths be put in a healthy condition and be provided with sufficient teeth for proper mastication of the food in order that the digestive organs may yield to medical treatment and be restored to their normal functions.

---

*Read before the Virginia State Dental Society, Lynchburg, August, 1905.

In States where lecture work has been done among the teachers, they have favored and in some cases have expressed a desire to teach oral hygiene in the public schools. Parents whose attention has been called to the subject, and to whom the plans have been explained, have favored the teaching of oral hygiene in the schools. The campaign has been carried on in many places to such an extent as to prove that the people want such teaching. Then the question is no longer whether nor why, but *how* should oral hygiene be taught in the public schools?

So far there are two practical plans by which the subject may properly be introduced in the schools: One, in the form of a separate text-book, and the other by a chapter in the physiologies. The separate text-book is best suited to the cities and the separate school districts where the books can be used as supplementary readers and furnished by the schools in the libraries, as valuable works on many other subjects are now used. Supplying the books in this way seems to be the most practical for the present as it lessens the expense to the poorer children, and overcomes the opposition on the part of many of the school officials to increasing the number of books in the curriculum, to do which would require a change in the school law of most of the states.

The introduction of a well written chapter on "The Care of the Teeth" in the elementary physiologies, to be used in the country schools, seems to be the most practical way of instructing these children, as they do not have the benefit of the libraries as supplementary school books.

The difficulty in the way of the first plan is that there is no book published suitable for the purpose Let us hope that one will soon be on the market.

The difficulty in the way of the use of the chapter is that in many states the adoption of school books is had by counties, for a term of four or five years, and so allowing the use of several physiologies in a state, not any one of which may contain a suitable chapter on the care of the teeth. State adoption is rapidly taking the place of county adoption, and the various state dental societies should make use of their opportunities to see that whenever there is a state adoption of a physiology that it contains a suitable chapter on "Oral Hygiene" or "The Care of the Teeth".

In justification of the above plans and as evidence of their practicability, I might relate the work done by the Mississippi Dental Association along these lines.

In April 1898 a paper was read before the Mississippi Dental Association on "Oral Hygiene," advocating teaching the subject as a separate text in the public schools. The Association appointed a committee with full power to act and authorized them to take such steps as they deemed best to secure the teaching of such work. The committee decided to prepare a textbook and to make an effort to have it introduced in the schools. The state Superintendent of Public Education was consulted and arrangements made between him and the Association to have dentists deliver lectures on "Oral Hygiene" to the teachers at the various state normals. Lectures were also delivered in many places to the children in the school rooms. This work was kept up for two years, giving instruction and preparing the teachers and the people for the introduction of the subject. The expense of this was borne by the individual dentist who did the work. At that time text-books were adopted by county boards.

In 1900 a bill providing for state adoption failed to pass the legislature, which made it impracticable to get a new subject in the schools. In the mean time the Text-book Committee of the Association had been at work. Since that time they have completed a text-book on "Oral Hygiene" which has been approved by the Association. As yet the book has not been published for want of satisfactory arrangements with school book companies for publishing and handling the same.

In 1904 the school law of Mississippi was changed so as to provide for state adoption of all school books. However, the change of books was not made until 1905. At this time the sentiment of the teachers of the state was in favor of a chapter on "Oral Hygiene" being inserted in the physiologies. At the April meeting of the Mississippi Dental Association, a committee was appointed to confer with the State Text-book Commission with a view of securing the insertion of such a chapter. The committee prepared the chapter and succeeded in having it inserted in the elementary physiologies to be used in the state. The State Superintendent asked the Dental Association to send lecturers to the two largest teacher's normals to be held in the state this year, and at the state's expense. These lectures have been delivered, one of which was by the writer, at Clinton, Mississippi, on July 3rd., to about three hundred and fifty teachers. Persistency has accomplished something in our State as it will also do in others.

ASEPSIS IN OPERATIVE DENTISTRY.*

BY DR. B. BRIDGFORTH, RICHMOND, VIRGINIA.

It is said that there is a time for all things. This trueism may well be amended by adding that there is always a time for some things. And believing also in the adage, that "cleanliness is next to Godliness," I offer no apology for presenting for your consideration the subject aseptic dentistry. Do not understand me to mean that surgically clean dentistry—that is absolute asepsis as a surgeon would practice in a laboratory for instance—would be practicable in the dental office; but I do mean that we should have clean surroundings as seen from a patient's vs laymen's view point. Now how can this best be done? Simply by observing the ordinary laws of cleanliness. The waiting room should be well ventilated, dusted and put in thoroughly good order each morning before the beginning of the office hours. The operative room should be treated likewise. Do not let the repulsive and reaking odors of the iodoform and creosote greet the delicate nostrils of sensitive patients upon ushering them into this room. This is not calculated to make a good impression. I will add by way of parenthesis, that I am thoroughly of the opinion that these drugs are not at all necessary in the treatment of any disease, and should not be kept in the dental cabinet or office. One of the very best regulated hospitals that I know of has not a grain of iodoform within its walls. The cuspidors should be thoroughly flushed out each morning, using any of the various mouth washes which will disinfect and deodorize. See that the towel rack is plentifully supplied with clean towels and the linen drawer well filled with napkins and doilies, this costs little, and is worth a great deal. The bracket should always be covered with clean linen. It has been suggested that instead of linen it should be covered with an ordinary window pane of glass that can be easily wiped off. The linen on the head rest should be changed after each patient, and the cuspidor should be noticed to see that it is in good order; and do not wait until the patient is in the operating room to do this, for this will also make a bad impression. Now then the room being in thorough order, having possibly the faint odor of some good disinfectant; the linen on chair and bracket clean, the patient is ushered in and placed in the chair. The instruments are then scrubbed thoroughly with a good scrubbing brush using a plentiful supply of soap and water. Now rinse them in alcohol and burn them off. This can best be done by having a small receptacle of alcohol always at hand; the instruments being grasped by the handles are put into this; the liquid extending about one third of the length of the instruments, they are then touched to the flame and are quickly burnt off; all of which takes less time to do than to tell it. Nothing that you can do will make as good impression upon your patient as the above procedure, and should invariably be done with each patient. This is one of my hobbies, upon which I wish to place special emphasis. I have tried many methods of sterilizing and none seem to be as effective, certainly from a moral standpoint as this, and it is by far the quickest way to do it. The alcohol burns off so quickly that the temper of the instruments does not seem to be in the least affected. Some bacteriologists claim that this method does not kill all micro-organisms, yet it is reasonable to suppose that dry heat of this intensity will produce a fair degree of sterility. The hands should now be bared well above the wrist and scrubbed thoroughly with a good brush and any good soap. It is not deemed advisable to use green soap for this purpose, as its constant use is too severe upon the skin. You please pardon me for dealing in personalities as we will now take up the personal neatness or cleanliness of the dentist. Imagine if you please a dentist operating upon your mouth with tobacco-stained fingers; a two day's growth of beard upon his face and wearing soiled linen. This carelessness is inexcusable and has cost many a brilliant operator very dearly, resulting in the loss of not only his best patients, but their respect as well. We can not be too particular in this respect, nor can this part of the subject be too strongly emphasized, however delicate it may seem.

---

*Read before the Virginia State Dental Society, Lynchburg, August, 1905.

Please excuse the brevity and poor manner in which this paper is prepared, for which I tell you it is due somewhat to a very annoying and peculiar accident that I met with a few weeks since, and am sure you will pardon my shortcomings. I was in the act of placing a saliva ejector into its socket when it broke and plunged into the left thumb *completely* severing the flexor tendon. I am glad to report by the skill of a good surgeon, and the tube that inflicted the injury having just been taken from a bichloride of mercury solution being aseptic the wound healed by primary intention, the flexion of the thumb restored. I mention this fact that you may guard against a similar injury and also that you may know my reason for not being present today, having gotten too much behind in my work. In conclusion allow me to express to you my disappointment in not being with you. I have been a member of the State association for thirteen years and this I think is the second time that I have been absent from its annual meetings. This silent evidence bears stronger testimony of my sorrow in not being with you than a mere expression of words could convey. May the indefatigable effort of our President be rewarded by the best meeting that the association has ever enjoyed in its entire history.

THE MECHANICAL SIDE OF DENTISTRY.*

BY D. P. SIMS, LINCOLN, NEBRASKA.

Can any good thing come out of Nazareth? Can the finished product be superior to its author or maker? In other words, can the finished work of the dentist be an evidence of his ability?

To be contented is to stand still, to progress is to advance, and we can only advance by striving to reach a high ideal.

To raise the status of dentistry we must advance the mental and physical attributes of the men who are in and who are preparing to enter this field of work.

> "A little learning is a dangerous thing,
> Drink deep, or taste not the Pierian spring;
> There shallow draughts intoxicate the brain,
> And drinking largely sobers us again."
> —*Pope.*

We need more learning, culture and ability. A good large store of the first two should be acquired before the student is admitted to the dental college, how much might be difficult to say, as all through life we are supposed to continue to add to our store of these two important qualities.

---

*Read before the Nebraska State Dental Society, May, 1905.

Ability is not less important, but before we say any more on this subject let us find out where we are at, and who we are, and to what class of the world's workers we belong, that we may ascertain toward what our efforts should be directed for our betterment.

We have our literary men, authors and editors, but while we have some among us we do not claim to belong to that class.

Then there are the bankers, great financiers and stock gamblers, but while we have some among us we cannot trot in that class.

We have politicians, those who have to do with the government of the country, statesmen pure and simple minded, dominated by high and lofty principles only after the money question has been settled, but we do not belong to that class though they are in our midst.

Perhaps we belong to one of the professions; but which one, for we now have all kinds? Those professing to accurate knowledge of everything from the top of our heads to the end of our toe-nails.

We have professors, L.L. D., M. A., Ph. D., F. R. S., and Ass.

The word "profession" embraces a great deal, so does the dentist. We can, I think, safely and without contradiction claim to belong to a profession.

Is it the medical profession to which we belong? A great many try to think so, but I am not sure that we want it that way. Perhaps we have something better, more accurate and scientific.

A doctor is a teacher, and we have doctors D. D., who profess to teach us how to live in the next world, and doctors, M. D., who profess to teach us how to live in this world. Some are high up and lofty in their aspirations and devote their time to the mysterious workings of the brain, while others think they get right down to the bottom of things better by choosing something more material as the part best suited to their instincts.

I do not know of any one class of men deserving of more credit for their efforts than the medical profession, for they have chosen that which is most difficult, to cure the ills of the human body, when of the whole list of drugs of the pharmacopea there are but two specifics. At least so says Osler who, if he has not been chloroformed, is still one of their great authorities.

What do we want to be the behind of the medical experiment wagon for, anyway? I do not like to be an appendix, which, whenever trouble arises, can be cut off and in this way silenced. The dental profession under the name of the section of stomatology attempted to butt into the National Medical Association and that is about as far as they have ever gotten.

Let us stop being a side attraction and be the whole show, then we can do as we please. I do not like to be patronized, and to be patronized by an older profession belittles us. By the mere fact that we have accepted this position we stand convicted of inferiority in the eyes of the public on our own testimony.

When you went down to St. Louis last summer, what was it you saw at the great exposition? It was great buildings, beautiful works of architecture, magnificent scenic effects, mechanics of all classes, great engineering projects which, as you contemplated them, you were amazed to see what brain had done, what energy and courage had brought about with the assistance of those who work with their hands and fingers.

All was mechanics and art, that whole show, with the exception of some little side attractions, was mechanical.

Here I assert that we are mechanics, and we need not be ashamed of it. We are a mechanical profession. It makes it easier to put "profession" to it, doesn't it? If the dental profession years ago had given more attention to the mechanical end of it and less to the professional end, we would now be better dentists.

Our work is almost wholly mechanical and artistic, we are high-grade mechanicians or should be if our training had been properly directed. Manual training should be given greater importance; carving and moulding or anything which will train the eyes and fingers is what we need.

To keep everlastingly doing over and over the same thing, with the mind concentrated on the one idea of arriving at perfection ends in skill and ability. What great things can be accomplished when the effort of the mind is concentrated on the one object of doing perfectly, and it pays. It pays to give every man full value for his money.

I believe there is some sort of an unwritten law, that in the end we get what we deserve. This is not true in every instance, but there is a general average. Like the first law of motion. "A body at rest remains at rest, a body in motion will continue moving with uniform motion in a straight line, unless acted upon by some external force."

And likewise we will get what we deserve unless some external force gets in its work first. It is best to figure on getting what we deserve, for the external force, like fickle fate, may fool us.

There is no royal road to geometry, and there is no straight and narrow path with no chance to go wrong, on which the dentist can slip through on flowery beds of ease, to the music of love, peace, success and reward. He has got to work if he gets there, and these dopes and numerous preparations on the market, which are offered to the dentist to make his work easy, will, I fear, be the music of the Sirens which lured Odysseus on the rocks.

If you have the most difficult end of a tooth, the root end to fill, fill it mechanically with any inert material substance. This is a case in which it does no good to trust to Faith, Hope and Charity; offerings of perfumed atmosphere will not be sufficient, neither will a lot of stinksusoutstink and other lot of stinks which may be in that root.

That is too much of a shot-gun prescription; might be all right if we were in another line of work and trying to treat a patient and did not know what his disease was, in which case we might give some aconite for his fever and knock his heart out, then add something to brace his heart up; add something else to make him throw up and another drug to settle his stomach, then something for the kidneys and lastly another for the bowels. Then trust to luck that the right one will catch on and do the business and that all the others not needed will remain passive.

There need be no guesswork in anything we do; ours is an exact science, or it can and will be. At the present time there is much dental work being done which is far from mechanical perfection, I mean that it is entirely too far from perfect work. A gold crown that is one-sixteenth of an inch larger than the root over which it is placed is an awful job. No machinist worthy the name in a machine shop would think of making such a fit. A good mechanic in a shop will work to a fraction of a thousandth of an inch. Many of our instruments and apparatus are made up with such care, that if in the making certain parts a mistake of a thousandth or even one-half a thousandth of an inch is made they are thrown in the scrap-pile. When work is done to a fraction of a thousandth of an inch, it is accurate mechanical work and something to be proud of.

Before we can make our crowns with that degree of accuracy we will have to have some better instruments for trimming and taking the measure and shape of the tooth than we have at present, but to miss it a sixteenth or even a thirty-second of an inch is something to be ashamed of.

It is not crown-work alone, but almost everything we do that requires mechanical ability; the extraction of teeth; the preparation of cavities; the manipulation of the filling materials; the polishing of fillings; all prosthetic work, and lastly the care of all the instruments we use is mechanical and requires a knowledge of mechanics.

As it would make this paper too long to go on with each of the above and attempt to show how the laws of physics applies to each, I will only mention a couple of the most important.

A knowledge of the laws applying to levers as applied in the construction of artificial teeth is most useful, and if borne in mind that in this case it is best to keep the load between the power and the fulcrum, much will be done in the way of preventing tipping of the plate.

Another to remember is that in perfectly elastic bodies the angle of incidence is equal to the angle of reflection. This applies to the shaping of all cavities and especially so if it is to be filled with a porcelain inlay. A study of the directions in which the lines of force will be applied and the shaping of the cavity, that these forces will be met with a solid wall, straight angles to the lines of each force should be kept in mind and followed out. In such a construction all force applied tends to press the filling or inlay into the cavity, while if the lines of force act against an inclined plane the tendency is to force the filling out.

As nearly all our work is done with instruments, a knowledge of them and how to take care of them is very important. But a very few drugs are necessary in the practice of dentistry, and but few things done with drugs but could be better done with instruments, from the treating of teeth and the destruction of abscesses, clear through all our various operations, all can be done with instruments, and consequently a knowledge of instruments and how to handle them is most important.

The student should be made to make his first set of hand instruments, the shaping of them, the hardening and drawing the temper, then the finishing is as useful and instructive as anything he can be put through, and after that he will know how to take care of them.

Oil is a wonderful thing. You all know what a slippery thing an oily tongue is, and how oil on troubled waters soothes them and makes them run easy. It is just as good a thing on running machines, and much trouble and many dollars would have been saved if dentists but knew the true value of oil both for the tongue and their machines.

Too great emphasis cannot be placed on this that the dentist should have a full knowledge of all the instruments he uses and how to take care of them; this adds to our stock of ability.

Learning and culture enables us to handle our ability to advantage, but without the ability success is not likely to be attained.

The conceited man has all kinds of confidence in himself, but he is incompetent, he thinks he is what he is not, he therefore cannot inspire the confidence of others. The man of real ability is he who, when the public come to him for advice and his services, can speak with that assurance which inspires confidence, because back of it is ability.

The conventionalities of society cannot be ignored, and it has been thought best to assume that we are one of the great learned professions. We all understand that, but I think we have been posting, we have been a side attraction. To be the real thing and sail under our own colors would be much more likely to inspire the respect of all people whose respect is worth having.

Let us stand on our own merits, live or die, sink or swim, survive or perish, without the aid or consent of any other cultism or profession on the face of the earth.

DISCUSSION.

Doctor Morrison: I heartily agree with Doctor Sims that we should be the whole show. Any one dentist, whatever he undertakes, can prove by his work. We have an exact science. The physician gives his medicine to the patient and does not know what the result will be. Those are the two most important features in the paper, with very little criticism to be made on it.

Doctor Baird: In my mind this is the most important thing. A man might be a genius, and yet not be able to drive a nail through a board. A man like that certainly would not be very successful as a dentist. It seems to me we have always paid too much attention to the theoretical part of dentistry and not enough to the mechanical part. I think there are too many men who enter into the field of dentistry who have not got the power of constructibility to do this mechanical work. Doctor Sims says the crown, after being removed, is often found to be from one-sixteenth to one-thirty-second of an inch larger than the root over which it is placed, which certainly is not an artistic or mechanical job. I am not a past-master in that art, nor in the principles of dentistry, but I have noticed that work done along the mechanical lines, if artistically done, is more satisfactory and gives better satisfaction. I am sorry that Doctor Peterson was not here to open this discussion. I consider Doctor Peterson one of the best mechanical men in the state of Nebraska in the practice of dentistry. Those who have seen his work will admit that he does some of the most artistic bridge-work ever seen.

Doctor Roseman: I never had any sympathy with this great hue and cry as to whether the dental profession is a part of the medical profession. It has often disgusted me. I see no reason why it should play second fiddle to the medical profession. Our work is largely mechanical. Some years ago I had a patient in the chair, and a physician was standing by, and he was commenting on the horror of dentistry and I replied that dentists' patients come back to the dentists, but patients of physicians are buried six feet under the ground. Our work should be more mechanical, and we should pay more attention to that part of our work.

Doctor Cook: I don't know just what position we should take on this subject. What is the difference between theory of mechanics and actual mechanics? We know that men cannot study and become scientific mechanics unless they study theoretically. They have got to study principles, and there is no question about it. While we must say our profession is very largely mechanical in its application, at the same time we must not lose sight of the fact that we are dealing with biological subjects. We must remember that all roots are not exactly the same; they are different and perhaps there are no two that are absolutely alike. You cannot establish any distinctly absolute mechanics.

The Doctor's paper stated that he worked on that principle. He has two inorganic subjects on which to work. So there is a subject that we cannot ignore in our profession. I am willing to admit that our applications of mechanics are the essential things, but at the same time we should know to what we are applying our mechanics, and unless we know that, I don't see how we can classify ourselves as a profession. We are simply mechanics. We have the physical properties of teeth to deal with which are more variable than the stones that are found in the earth. In dealing with porcelain inlays we have not got the absolute tooth as we have the porcelain. We know that porcelain is a know quantity, but that of a tooth is not an absolute know quantity. We are working in a chemical compound about which we know but little, and we have a thousand theoretical problems which we should solve before our profession will reach a high standard and take a place in the professions of the world. We can pat ourselves on the back and say we are great men, but then we haven't demonstrated so very much after all. We haven't got into the high places in the sciences and arts. I want to maintain my standard, at the same time I feel that we cannot ignore all the other things in life to the absolute mechanics, because we are not adapting our mechanics to the known quantity.

WHAT I HAVE LEARNED FROM THE STATE DENTAL MEETINGS.*

BY DR. E. A. MESERVEY, KEARNEY, NEBRASKA.

My purpose in writing this article is to show to you the value of State dental societies.

I wonder how many of you go home and sum up what you have learned and the amount of good you have received from these meetings?

When I paid my annual dues to the treasurer, Doctor King, last year, he said to me, "Doctor, I see you are the only dentist in Kearney." I replied, "Doctor King, I think you must be mistaken. If you should read our daily papers or take a walk through our principal street you would learn that there are others." "Well, you are the only one I have on my books."

---

*Read before the Nebraska State Dental Society, May, 1905.

That is what prompted me to write this paper. If Kearney has five dentists and only one is a member of the State Dental Society, there must be other towns of equal or worse proportion.

Why don't more attend these meetings? Surely not because there is nothing of interest here. Possibly they have not been sufficiently urged; possibly they have not been told that it is a place where they can *gain* knowledge and *impart* knowledge. As for myself I don't remember whether I was asked to join or not. I know I *do* remember of being so anxious to attend that I started in advance and discovered my mistake when I reached Grand Island, where I stopped to change cars. Having a little time on my hands I made a few calls. I asked Doctor Finch if he were not going to the State meeting, and in answer he said: "Why, yes, next week." I soon discovered my mistake and went back home.

The meeting that year was held at York and my only recollections are a lot of dentists—jolly good fellows most of them—and I was one of them.

A small town is a poor place to hold a meeting, due principally to lack of material to work on. Lincoln and Omaha, in my opinion, are the only places where a successful meeting can be held. Besides, Lincoln and Omaha have other advantages that small towns lack.

Dentists from country towns combine business with pleasure with their annual society meetings, and the larger places have those opportunities.

The Omaha contingent at York were successful in landing the next "meet," and I was there prepared to do my share and absorb a little more knowledge.

I had a paper on "Cleanliness," which I did not read—more from fear than anything else—and a clinic, "An Alloy Filling; Black's Method of Preparation." A dentist from Council Bluffs, an elderly man, was a willing subject for my demonstration, and a very good one. He was either immune from pain or there wasn't any—or he was a Christian Scientist, I can't say which. Anyway I was able to chisel and hack away to my heart's content, and I finally formed a cavity that was perfect in every detail.

I honestly, and without being egotistical, don't believe Doctor Black himself would have made any changes—extension for prevention, flat base, parallel walls, steps for retention, were all there.

During this time I was frequently interrupted with, "What's that, a new kind of rubber?" or "Where did you get that dam?"

Just before I commenced to operate I discovered that I had forgotten my rubber dam and I went out and bought some. It happened to be something new, an aluminum finish on one side, which was quite a novelty to those who happened to be around my way. I commenced to think that I was exhibiting some new dental ware instead of an alloy filling. About every nine out of ten would ask about the rubber, while the tenth man asked to see the cavity preparation, which I willingly showed him. I pointed out the reason for the extension for prevention, flat base, step, etc. I had something good and I knew it, but outward appearances were against me. I was young in looks, fresh from school, and from a country town, but happily for me I was totally unconscious of all that.

But here is the point! I venture to say that of the one hundred and fifty or two hundred dentists who were present there were not over twenty-five who had ever seen a cavity prepared as Doctor Black would prepare it. The secret of it all is, I was demonstrating an amalgam filling; two-thirds of our fillings are amalgam and two-thirds or more of us neglect such fillings simply because we are too poorly paid for them—anyway to get them in, and the quicker the better.

We had with us that year, Dr. C. N. Johnson of Chicago, famous for gold fillings. Doctor Johnson is one of the clean dentists whom you like to look at. You know we have clean dentists and some who are not—clean hands, clean clothes, clean mouth and a clean mind. Can you imagine a man of that description putting in any thing but a clean filling?

The gold filling Doctor Johnson put in made an indelible impression on me. I took it home with me, and suspended it above my chair, and there it has hung ever since.

In putting in gold fillings, a mental picture of that filling is constantly before me, and it has been the means of urging me on to better work. I only hope that others have received a like benefit.

How many of you give yourselves credit for what you learn at State meetings?

You all know Doctor McMillan of Kansas City, or if you don't, you ought to. Our meetings would not be complete without him. He always has some good practical ideas that appeal to one.

I remember at one of our meetings he had a card of curios, which consisted of crowns, bridges, etc., of an old date, some of them very crude and coarse of construction. Under each specimen appeared the name of the man who had made it In reply to questions, Doctor McMillan said they were from some of the best men in the profession.

"The most of these specimens," said Doctor McMillan, "were made years ago. They look a little crude in comparison with the work being done now. These same men are doing entirely different work now. It not only shows advancement in methods, but advancement in workmanship. Several of those that you see on that card are my own, and I am not ashamed of them, either."

There was a lesson to be learned, and a good one. It taught me not to be ashamed of my work done in the early stages of my dental career. It gave me courage to know that other men had had failures and had overcome them. It made me feel that I was not alone with my troubles and difficulties. Doctor McMillan said: "These specimens are not from the poor men of the profession, but from some of our best."

It isn't every man who has the courage and frankness to display his mistakes to the public in general.

It is the constant and never-ending determination to make better each day the work of yesterday that gives you courage to display your faults. Study well your mistakes and failures and some day your handiwork will have written on each piece the word "victory," and the world will be reading it.

Since I became a member of the Nebraska State Dental Society I have attended all the meetings except two, so I am not able to give an account of all.

The meeting at Omaha last year was quite well attended and several good papers and clinics given.

It is not my intention to give a detailed account of each meeting, or of all that I have learned, but of the things that have impressed me most and that have given me the most good.

I have a mental picture of two men working side by side, at the same kind of work, one a beginner and the other an old-timer, to use a common expression. The work was porcelain inlays. I was attracted to the beginner by his energy and enthusiasm. He was heart and soul in his work and was more than anxious to enlighten those who were seeking information. With the old-timer it was different; he had passed that stage of enthusiasm and was now high on the ladder of fame. Victory and success were his, for his slow and certain movements showed plainly that he was master. He had a purpose to fulfill. Before him was human nature deformed and broken down by disease. By the aid of instruments he had gotten rid of disease. Now to replace this broken-down structure was his purpose.

I had not long to wait, for he soon had moulded into shape an exact counterpart of nature herself. The restoration was marvelous, simply marvelous!

The sculptor and painter, for centuries, have been trying to reproduce and make lifelike human nature, but all have failed. This wonderful piece of art, for art it was, was accomplished by one from the dental ranks and we should feel proud of it.

Let us go back to the beginner. We find his restoration not so perfect, but the energy and enthusiasm which he displayed will in time bring perfection.

The lesson to be learned here is, with the beginner.

Why don't we make the start? Why do we sit idly by and let others crowd us out? The young man who was working by the side of the one with fame and experience was a beginner and his work a little crude in comparison, but ten years of active work with that enthusiasm will place him where the older man now stands and you and I will be still looking on.

Inlay work has a place in dentistry the same as crown and bridge-work and the man who doesn't make the start will not be called progressive.

When I think of the benefit to be derived from our State meetings, I wonder why our membership is not twice as large.

The list that was given me of Nebraska dentists gives four hundred and seven practicing in the State at the present time. (I can't vouch for the correctness of this, however, and if there is any one here who can give the correct number I wish he would do so.) Of this number one hundred and twenty-seven are members of the State society.

In Omaha we find about seventy dentists, twenty being members of the State society; in Lincoln, thirty-three, with twenty-one members; Fremont, seven, with three members; Nebraska City, six, with two members; Hastings, ten, with one member.

The State of Illinois has three thousand two hundred dentists, and three hundred and sixty-eight are members of the State society, or about one-eighth. So you see we are doing pretty well by comparison as *we* have almost one-third as many members, but we can do better than that if we make an effort.

The *medical* society of Illinois doubled its membership.

Now what *we* should do is to increase our society membership. Let every member make it a point to get some new man, and make our meetings so big and interesting that no dentist can afford to stay away. Let each member do all he can to help in making the meetings a big success, each and every one take an active part. Don't wait for the corresponding secretary to ask you to do something, but write to him and tell him what you would like and what you, yourself, will do to help along.

Remember when you write a paper or give a clinic you are not only helping your brother member, but you are helping yourself as well.

With apologies to those who have these meetings in charge I am going to offer a few suggestions.

A merchant buys a stock of goods; buys that which he thinks will best suit his customers. His goods arrive and he displays them to advantage. His clerks are the best, and those who visit the store are made to buy and their attention is called to each and every article on display.

This society has placed its order for goods and the month of May each year is given over to two or three special sale days. Every visiting dentist to the special sale should be given an opportunity to carry home articles which interest him most. While looking over the different bargains his attention should be called to each and every one. Criers or salesmen should pass in and out of the crowd and see that each one is having his wants attended to. The goods this society has on hand should be gotten rid of in such a way that each man who comes to buy will go home well satisfied with his purchase.

That sounds like *business,* but in order to make these meetings a big success and have every one satisfied we must apply business methods.

I notice while clinics are being held by different ones, about three men in the room have, and hold, the crowd while a few apparently less important ones go on with their work with little or no attention from those present.

It is unfortunate that only four or five can see to advantage an operation that is going on at a chair and usually the four or five get well located and freeze on during the whole operation.

Now what we want is a good salesman or crier to announce every now and then the operation or bargains that are being held at that time.

Doctor Smith, of Chicago, is giving a clinic on gold fillings. He has about him a crowd that is eager and watchful for all he says and does. Doctor Jones, from Jonesville, Nebraska, is also demonstrating gold fillings, but he hasn't the crowd although he may have everything else that a dentist could ask for. His manner and appearance do not attract because he is from Jonesville. No two men work alike, so that it is possible to get as much from Doctor Jones as you would from Doctor Smith.

Now the purpose of this crier is to call attention to Doctor Jones' goods. First this crier, or special salesman, should find out what Doctor Jones has for sale. He must discover among his goods something that Doctor Smith of Chicago has not and then in loud and convincing tones, tell all about it. That will relieve the congested condition at some other point and in that way keep the crowd of purchasers going from one place to another.

Last year one of the clinics given was the administration of nitrous oxide. I was very anxious to see it and was there for that purpose, as I intended getting an outfit. I was watchan inlay clinic and a few minutes afterwards discovered that the nitrous oxide clinic was over and I had missed seeing it. I was directly across the hall from where it was given. Now, whether it had been announced, I cannot say. I only know that I did not hear it if it was. I was very disappointed as it meant a good deal to me.

To go back to Doctor Jones, when you visit his clinic drop a few words of encouragement in some way, and you will see Doctor Jones giving another clinic or helping in some way at the next meeting.

I remember well listening to a paper given by a young man from Lincoln. Doctor Shriver opened the discussion. About the first words Doctor Shriver said were, ''Gentlemen, I want to say that I admire that young man for the paper he has just given us." Can't you imagine that was lots of encouragement to that young man to have one of the older members of the profession compliment his paper in that way, and can't you imagine that he would go home enthused with the idea that he had done a good service to his fellowmen, and would be with us again this year?

We must not overlook the young members of the profession. They are fresh from school and have modern and up-to-date ideas that are good for all of us.

B. B. B.*

BY HORACE WARREN, D. D. S., MISSOURI VALLEY, IOWA.

When a Salvation Army Corps goes marching along the street to a fife and drum, it doesn't imply the claim that there is any saving grace in the fan-fare of trumpets, but only that the end justifies the means and they wish to enlist the interest of the people, then they can save their souls. We, too, as a profession, are in the saving business, and this succinct alliterative caption is used simply to draw a crowd, for, while it is to me a highly important subject, it is one that has never elicited much attention from practitioners. Articles on prophylaxis of the oral cavity usually deal in generalities and ambiguities. The essayist has always endeavored to read everything published upon this subject but has never seen anything that approached explicit directions in the premises. We are not treating ourselves, our patients or our profession honestly, when we neglect so to inform our patients with reference to the personal care of their mouths, and the integrity of our operations is seriously affected by such neglect. I have inquired of many fellow-practitioners if they are in the habit of impressing upon their patrons the necessity of personal care of the teeth. A few have answered me "Yes," then, upon asking such what they tell their patients, they usually answer, "Oh, I tell them to brush their teeth"—brush when, how, which? What do the laity know by intuition about the correct way? But, worse yet, and oh, the shame of it, the majority of dentists have told me that they usually don't say a word to patients on the subject, except to advise them to have their teeth examined once (or twice) in a while. Asked why such wanton neglect and they perchance would answer, "It doesn't pay," or it's "casting pearls before swine," etc. Well, it is before swine we must admit, in many instances, but more's the pity and reason for the admonition. For many years I have made it a point to interrogate patients as to whether their former operators had ever told them how to groom the mouth. The answer nearly always is, "He didn't say a word."

---

*Read before the Nebraska State Dental Society, May, 1905.

It is the conscientious duty of every practitioner of dentistry to call the attention of all who come under his professional supervision to the necessity of hygienic measures in the correct manner of carrying out said measures properly. Properly, is used advisedly, for upon inquiring from patients it is ascertained that there are many persons who are following some directions or using some material as a dentifrice which is absolutely injurious and which upon advice from a reputable dentist would be corrected. One instance: We are all frequently told by some one that he uses salt as a dentifrice, because, forsooth, in some newspaper article portraying the various uses of this condiment, he noticed that one was its excellence to preserve the teeth. Yes, out of the mouth it will preserve them very well, but we all know too well that it is hardly a fit ingredient of a tooth-powder. Another vagary is that hot water should be used with which to brush the teeth. Those of our patrons who have been more than ordinarily zealous in the care of the teeth are usually pleased to be placed on the right track, and are perfectly willing to have their errors corrected; and those biped-pachyderms who associate with human beings while maintaining veritable cesspools within the oral cavity and sit down in our chairs without even having a lawn-mower run over their teeth to remove the mogs, do not deserve any consideration so far as their feelings are concerned, and probably wouldn't appreciate it were it occorded them; therefore, logically, it is clearly one's duty to advise those under our care in the correct manner of keeping the mouth approximately clean, for we all know too well that it can't be kept, like "Royal Baking Powder," absolutely pure.

The author wishes to modestly claim originality in placing prime importance to the idea which prompted the subject of this paper. B. B. B.—Brush Before Breakfast. So far no writer, in either text-book or periodical, has advocated the advantages of brushing before breakfast. The writer has made it a personal practice for the past thirty-seven years, never having missed it once for over twenty-five years, and wishes to go on record with the opinion that pyorrhea alveolaris would pass into history if this custom were universally followed, never having seen a trace of this dread malady where the teeth were regularly brushed before breakfast.

If the teeth were brushed but once a day it would be of far more benefit to them if done then, and further, brushing before breakfast will do more good than all the subsequent brushing of the day. The next most beneficial time is just before retiring. The teeth should of course be brushed "after meals" according to the stereotyped directions but not immediately upon rising from the table. But first, as to cleansing of the mouth, as well as the teeth, before breakfast. The tongue should be thoroughly brushed before breakfast and see that the patients are brushing well up on the necks of the teeth, getting friction up on the gums, and thereby keeping them healthy, for without such action they will almost surely have pyorrhea sooner or later. With reference to the rotary plan of brushing the teeth so frequently advised by the maker of brushes and indeed by many writers, it is all "bosh," only making the task more onerous to those who already think it hard labor.

As we are all aware, the tartar is precipitated during sleep when the fluids of the mouth are in a quiescent state. Now, if one eats before removing that tartar (which feels to the tongue each morning like ground glass) it will be forced by the food passing over the teeth down under the free margin of the gum. Next day a little more, till, after a while you will have a solid slab of tartar which can only be removed by the scaler.

After each meal, on rising from the table, immediately, if at all convenient, the mouth should be rinsed correctly; see that the patient understands how to do this (demonstrates.) Then, the teeth should be picked with a fine wooden pick or quill, if the latter is properly trimmed, as they are not pointed correctly at the factory; then brushed if convenient. The ideal home should have a lavatory off the dining-room into which guests might step for a moment and cleanse their mouths, for they are filthy receptacles until that is done; and a bottle of peroxide of hydrogen should be at hand to neutralize any odor of the food. By rinsing the mouth afterward strenuously with H_2O_2 and borolyptol each of equal amount, one may make a meal of raw onions, limberger cheese and beer without fear of being detected of the crime.

The brush, too, is important, and while I am not here to advertise any particular wares, the prophylactic brush, so-called, is the most effectual yet found, coming as it does in hard, soft and medium texture of bristles and adult's, youth's and child's sizes, it seems to meet all the requirements. As to a dentifrice, something neutral, somewhat pungent, slightly alkaline, perhaps, in retraction like borolyptol, is certainly indicated. Assiduously avoiding, however, all soaps, those containing soap and also listerine, as the latter is decidedly acid in reaction as the litmus paper will show and should not be used about the the teeth. The most satisfactory powder at this writing is the new combination gotten up by McKesson & Robbins only last year, which they have named "Calax." They claim that it contains oxygen, which is liberated upon coming into contact with the fluids of the mouth. Anyway, it is a very delightful powder, having no strong disgusting odor. (And right here, with the risk of being irrelevant, the impropriety of handling dentifrices and brushes should be emphasized. "Let the druggist do the work," and it will redound to dentistry two-fold.) A person should have at least two brushes that a dry one may always be on hand. A brush after being used should be rinsed and then wiped as dry as possible which keeps it much sweeter and makes it last longer; and it should hang on a hook in a light place rather than be thrust into a mug back in a dark corner. The teeth should be brushed during sickness if the patient's condition will possibly admit it, and should be done by the nurse when the patient is unable to do it himself. This custom is now being introduced into some of the progressive hospitals.

About advising patients to run silk between the teeth; it is very problematical whether it is right or not; if they would do it correctly without injuring the gums we must all admit the benefit thereof, but if they wound the membrane the good is neutralized by the injury. There may be nothing to all this business, but anyway I wish we may never again be called on to witness the incongruous, inconsistent spectacle, of a professor of one of the largest dental colleges of the United States moving among us intructing us in the preservation of the teeth, and carrying about in his own mouth, teeth filthy enough to put a hobo to shame. This many here have seen. If this paper elicits no discussion the author shall feel very much chagrined, for in his humble opinion there is nothing done for the human teeth which benefits them so much as brushing them before breakfast.

DENTAL CREDULITY, AVARICE AND PROFESSIONALISM.*

BY DR. E. W. REAM, CRAWFORDSVILLE, INDIANA.

That there exists in the dental profession a disposition to believe things on slight evidence, and to credit the alleged discoveries of the pharmaceutical, electrical and bacteriological laboratories with remedies and aids to our professional needs without ourselves going into masterly investigation, no one will deny. Neither will anyone deny that this disposition is a shackle on our profession which must be removed if we hope as a profession to rise nearer the ideal.

It would fill pages to enumerate the situations into which this dental credulity carries the practitioner. Mummifying remedies by the score lead the dentist astray from the definite and scientific information, formerly relied upon in the treatment of cases to which they are claimed to apply. Ad-Kon-Kor and its exhaustless list of associates thrust their claims upon him. Electrical devices in their myriad forms, enticing in their illusions, find a susceptible subject in the dentist. Even the field of dental hygiene is flooded with various remedies to aid the profession in the "care of the teeth," each claiming a superiority.

These so called pharmaceutical, electrical and bacteriological laboratories give to their products a scientific hue that they may impose upon this susceptible dental credulity. To judge of their success, one need only note their financial condition; the conclusion will be that dental credulity *is* truly susceptible; and that professionalism suffers much in consequence.

You say, lack of education! Lack of education! Yes, but dental credulity is not confined to the practitioner who has a limited dental education. It reaches far into the ranks, and claims for its victims practitioners whose dental education should entitle them to respect, men and women who feel there is something, —that somehow, will do in some way, what scientific dentistry cannot do. In this something, somehow, in some way, we find the father of the ruthless, credulous, unscientific experimentation which many times thwarts the discovery of meritorious remedies that might be worked out by following scientific methods.

---

*Read before the Indiana State Dental Society, June, 1905.

But dental credulity is not wholly to be deprecated. It has a legitimate field, and, when confined to this field, is a means which helps to make the symmetrical professional practitioner. The excess it is which causes weakness, and it is this excess which deserves our notice as a profession if we would check its downward tendency.

The profession, like the individual, has an intellect, moral sentiments, selfish propensities, and the social elements, and likewise is acted upon by exterior influences. When the commercial spirit sprang into existence in our nation a few years ago and impregnated every commercial and professional field with avarice, the dental field got its full share of impregnation, and we have trusts in our midst to deal with, professionally, just as the chief executive has to treat them commercially.

This avariciousness calls into action the intellect of the dentist and uses the secretive, cunning, devising part of his nature to gratify the lust for gain. It overthrows the moral sentiments, and ignores their promptings to truthfulness; it leads the dentist behind his shield of dental credulity into institutions which rob him of any moral claim to professional honor.

It is when dental credulity and dental avarice lay their hands unitedly on the dentist that professional honor receives its most damaging blow. This blow is being delivered just now with telling effect. It is a blow that demands the attention of the profession; not only to note who is delivering it; upon whom in our ranks it is landing; what effect it is having upon them, and through them upon the whole profession; but also, what, as a profession, we are doing to counteract its influence.

These trusts are bold beyond any thought of being repulsed or reproved; avarice with them has no fear or conscience and the following is a fair representation of the enticements put before dentists indiscriminately.

"Reasons why you should be a member of the Blank Association of Dentists."

1. You become part owner of the Blank preparations. The best for the teeth.

2. You profit in the earnings from the Blank business.

3. You receive large dividends regularly.

4. Your Blank investments are absolutely safe and gilt-edged.

5. You are associated in a dentists' corporation.

6. You have an investment in a marvelously growing business.

7. Your stock participates in dividends that in the past have amounted to hundreds of thousands of dollars.

8. You share in a business that is established, one that has already attained great success

9. Blank stock can be realized on at any time at a profit.

10. The business is based on the co-operative profit-sharing idea.

11. Blank preparations are superior to all others.

12. The business has the strongest financial and ethical support.

13. Stock is being rapidly taken by the best dentists in the United States, which guarantees its success and safety.

14. By subscribing at once you get the immediate profit of the next regular dividend.

In these "reasons" the appeal is directed straight at dental credulity and dental avarice, to the latter faculty the more strongly because it effects the purse. What does it matter to a trust, how much the professional honor of the dentist has been sullied.

It frequently pats the dentist on his egotism with the remark, "It is not the money we want, doctor, so much as your interest and support." It has evidently studied the author who said, "Where a man's purse is, there his heart is also," more than the one who wrote, "The heart is not always with conscientiousness."

Other cases might be quoted, but this last appeal, which is made by most solicitors, "your interest and support," this is the noose which, once thrown over the dentist, strangles every atom of professional honor and binds him with that wonderful cord of credulity, and that cunning, strong chain of avarice so that he is no longer a free man, no longer at liberty to recommend to his patients things proven superior to the products of the trust to which he is chained.

This commercializing of the profession of dentistry has the double effect of destroying our claim to professionalism and of stamping us more distinctly as mechanical tradesmen; things which have been fought against by every dental association up to the present time.

Apparently there are three avenues through which betterment can be accomplished: whether these should be employed in whole or in part we would leave for your consideration.

The dental colleges can do much for the future of the profession; they always have wielded an influence for good, and their position for the future is more potent than any other force which has to do with this part of the question. By increasing the length of the college course or by instituting a chair whose especial duty it would be to investigate the products and the companies who make them, or by doing both, much good might be accomplished.

For an improvement of the present situation, we must look to the legislators who could enact laws that would restrict the powers of these companies, or at least, subject them to a proof of the virtue of their output.

But for the present and the future, the situation can be most successfully handled by the Indiana State Dental Association. Since its organization the general statutes of dentistry in Indiana have gradually attained such strength that our Association stands second to none in the Union. The creation of a board, or the appointment of a committee from the members of the I. D. S. A., whose duty it would be to report to the Association at its yearly sessions upon the merits of the different products of the various companies would serve to bring out the necessity for legislation, if legislation is needed in the best interests of the profession to hold these trusts in their proper sphere.

From the days of Dr. Phenius G. Hunt and his associates in the Indiana State Dental Association the aim of the organization has been professional honor. Let us continue to do all we can to, at least, keep the standard as lofty as when we began; exerting our efforts in a way to improvement, if possible.

DISCUSSION.

Doctor Albrecht, Indianapolis:—A peculiar task has been assigned to me in opening a discussion upon the essay that has just been presented to your consideration.

An attack upon an alleged existing evil has been made, and I presume I am expected to enlist my sympathies with those of the essayist, and thereby become liable to the pressure of a counter-attack. If there be evil in the issue, I may as well patiently and trustfully abide the time when evil will destroy itself.

There is no doubt in my mind that we, the dental profession, the world over, would have considered it perfectly scandalous, if the medical fraternity had become stockholders in manufacturing concerns, such as Horlick's Malted Milk, Listerine, Borolyptol, etc., etc., or Mineral Springs and Sanitariums. We would then have seen the mote in our brother's eye, but now we do not see the beam in our own.

No one will deny that a pecuniary interest in a remedy offers a strong temptation to exercise partiality to the detriment of honesty, justice and fairness. It is impossible to prove to what serious extent this partiality is practised. So far human laws have proven impotent to control the human conscience. You may shackle and coerce the five physical senses; but the human mind can and will assert its freedom and independence. All our ills and woes are the result of mental ignorance and sin for which there is but one successful corrective method, and that is, disease and suffering. There is but one effective pardon, and that is the divine pardon which is only granted when we forsake sin. Ignorance must be exchanged for understanding. We must *live* our better understanding. We must not only know *the golden rule*, we must live it.

I do not wish to be understood as opposing the enactment of human laws to restrict the development of evil. The necessity for human laws is but an admission of human frailty. Yes, by the very act of establishing laws we are self-confessed sinners; and when we stop to consider the situation, we are amazed at our own stupidity, when all the while we flattered ourselves to be rational, intelligent beings. "Quit your sinning," said Emerson once upon a time. Yes, quit your sinning and you will need no human laws.

Who is here that can with honesty in his heart and conviction of mind mention and proclaim any oral prophylactic as the best? What are the conditions of the mouth? Will a prescribed preparation meet the requirements of the case? We admit the principle of science to be exact and absolute. How much understanding do we have of the exact and absolute principle of science? One set of scientists recommends an alkaline preparation; another set of scientists insists upon an acid preparation. One preparation is compounded from non-poisonous substances; another has an admixture of poison. And with all the recommendations and applications of remedies we must admit that we have not eliminated evil conditions. We must be objects of delusion or dishonesty or of both. Can we convince ourselves of this fact? Everyone can settle that question for himself.

In my opinion, there are quite a number of most excellent oral prophylatic preparations in the market. We ought to be proud of this fact.

Since time immemorial the human investigating mind has diligently and honestly searched for methods and remedies to alleviate the sufferings of mankind. Method upon method, remedy upon remedy, have followed each other in endless succession. Yesterday's discovery has been superseded by today's, and the past, at best, has become only a matter of record.

With a sense of absolute honesty and conviction you may face the world with a preparation in the manufacture and sale whereof you may have a personal pecuniary interest. Be fair and just to your competitor. Let your best judgment and your conscience indicate and dictate what is applicable to your patient's condition. I am satisfied that the dental profession manifests a great deal of "good will toward man." This is my belief and conviction, which is supported by an abundance of evidence as proof of my utterances. The world at large has been getting better since the time of Noah, and the honesty, integrity and artistic and scientific aspiration of the dental profession will not and can not go backward.

We all have a sincere, honest desire to do the best we know and mentally we grasp each other's hand with the fervent desire to do better without coercive, humiliating human laws.

Doctor Nyman:—May I say just a word? This practice which Doctor Ream has so sarcastically denounced, and which Doctor Albrecht has spoken of, can be defined as sophistry. This is nothing more or less than a bid after the profession. It is a form of robbery, so to speak, and the only difference in the method used and the methods of the sandbagger and the pick-pocket is that they are more clever and are frought with less unpleasantness to the victim. This is clearly a proposition of sophistry. I have been told that they would pay me a good price if I would condemn all other preparations and recommend theirs. This is simply what this is; nothing else. It is a straight business proposition, as far as that is concerned. They advertise in a trade journal. It is a matter of commercial profit on their part and nothing else.

SUGGESTIONS

KALIUM-NATRIAM TREATMENT OF ROOT-CANALS.

M. L. Rhein, New York.

A barbed Donaldson bristle is passed through the paraffine into the sodium-potassium and with a small amount of the latter clinging to the barbs, it is now gently passed into the pulp canal. The water which is present is at once acted upon, forming sodium and potassium hydroxide liberating hydrogen, which gas can be seen escaping. The caustic alkalies in their turn act upon the fats and the result is a sodium and potassium soap, with glycerine as a by-product. These substances are freely soluble and easily washed out of the canals. The process of attempting to wash out the canals, however, should not be undertaken until all portions either of living organic tissue or decomposed putrescent tissue have been saponified. This stage is determined by the fact that the characteristic bubbling action of the sodium and potassium when it comes into contact with either putrescent or living matter has stopped, and the chemical compound rests perfectly inert in the root canals. This alloy not only decomposes and disorganizes the tissues that exist in the canals, but in the act of doing so, it bores its own passage through the fine and inaccessible canals, such as the buccal canals of the upper molars and the mesial canals of lower molars. Its ability in this respect for finding the end of the most tortuous canals is limited only by the skill and patience with which it is used by the operator. When it no longer finds any fibrils in the tubuli to act on, it will cease to give forth its peculiar hissing sound. The next step is to wash out the soapy mass and any pigments that may be contained therein, in order to prevent subsequent discoloration of the tooth structure. For this purpose I used hydrogen-dioxide, which takes the place of the ozonized oxygen set free when sodium-dioxide is the agent used. Instead, however, of using simply hydrogen-dioxide, I have hit upon the expedient of dissolving in it the most reliable germicide at our command—bi-chloride of mercury. For this purpose I have found the only available hydrogen-dioxide preparation to be Marchand's preparation. I keep prepared for this purpose a solution of one part of Hg cl-2 to 500 H-2-O-2. The canals are thoroughly washed out with this solution, using a hypodermic syringe with platinum needles. The oxygen that is set free oxidizes all coloring matter that may remain in the tooth structure, and on the evaporation of the solution, a minute amount of the mercuric chloride residue is left in the dental tubuli remaining there as a permanent germicide. The canals are now thoroughly dried. A little sterile cotton is placed in the pulp chamber and the cavity is sealed with gutta-percha and the patient dismissed. If on account of lack of time all of the organic tissue has not been saponified at the first sitting, the cavity should be dried and sealed with gutta-percha without washing out the canals with the bi-chloride solution. This is recommended in order to avoid coagulating any tissue which could later be disintegrated and washed out. Should some sensitive tissue remain in the canals, then a dressing of one of the essential oils should be left under the stopping to obtain the benefit of its anodyne effect.

Upon his return at a subsequent sitting, the gutta-percha is removed, and if there is any question as to any organic matter remaining at the ends of the root canals, the sodium and potassium paste is again applied and followed with the wash of Hg cl-2 and H2-0-2. The canals are then thoroughly dried with heated air and a few wisps of cotton being wound around a Swiss broach, this is dipped in the oil of eucalyptus and passed to the ends of the dried canals. The canals are again dried with heated air, which forces this varnish of eucalyptus oil into the tubuli. This Swiss broach wound with its wisp of cotton is now dipped in a solution of base plate gutta-percha and chloroform, and this in turn is carried to the end of the respective root canals. From a bath of 10 per cent. formaldehyde, a cone of gutta-percha of suitable diameter is now taken and placed in one of the canals. A root canal plugger is then dipped in pure alcohol, and passed through the flame of the alcohol lamp, which, igniting the alcohol, not only warms the plugger, but thoroughly disinfects it as it enters the root canal and presses the gutta-percha cone down to the end of the canal. Sufficient gutta-percha having been placed in the respective canals and the plugger being wound with cotton wet in chloroform, it is now used to pack the gutta-percha to the bottom of the canals, in one solid homogeneous mass. The object is attained when the patient feels a slight pressure at the end of the root, which denotes that the liquid gutta-percha is penetrating the foramen. A minute amount of gutta-percha causing the most perceptible irritation to the soft tissues, cannot be considered in the light of an irritant if the operation has been attended with due consideration to aseptic surroundings. Its well known compatability with the soft tissues renders it the most suitable material for this purpose. The end of the root is now hermetically sealed, and in order to provide against any possible infection from without, the gutta-percha is now covered with a cement of oxid-chloride of zinc; over this any other operation may be proceeded with.

EXCISION OF A PORTION OF DENTINE FOR COMPLETE EXPOSURE OF THE PULP CHAMBER FOR SUBSEQUENT TREATMENT OF MOLARS.

T. C. Trigger, St. Thomas, Ont.

In order to successfully apply instruments and medicaments into the root canals of molars, easy access to them should be obtained. Many instances occur where free opening is not made, consequently great difficulty is encountered by inserting instruments in a bent condition past an obstruction of tooth tissue, which is known as the dentine horn or fold. This fold of dentine which forms a roof over the pulp is the hardest portion of dentine in any part of the tooth. In fact, it resists the burr in its work as some sections of enamel. Anatomically, this cap is situated directly over the most vital portion of the pulp, and is dipped downward, serving a purpose, no doubt, for protection. Before this lump is taken away the patient will complain that something prevents the passage of the instrument into the distal canal of the lower molar. To remove this cap take a small 11-round burr and drill a few lines, in a crescent form. At the extreme corners the drill will easily penetrate the spaces for the reception of the distal portions of the pulp. Carefully cut across as indicated, when this cap will be displaced in the form of a granule. By enlarging the orifice of the pulp chamber in this manner it will save the difficult and disagreeable method, usually employed. Generally after an immediate medicinal devitalization there is considerable soreness when any undue pressure is applied to the exposed portion of the pulp, but by cutting this away it will prevent any such difficulty. It is not necessary, always, to make a complete excision, but by carefully prying upward, using the base of the cavity as a fulcrum, the removal is easy. By removing this small portion of dentine the pulp remains undisturbed, giving a free access for its extraction and subsequent treatment of the root canals.—*Items of Interest.*

FLASKING AND PACKING RUBBER DENTURES—THE "OPTIMUS" METHOD.

H. S. Miller, Rochester, N. Y.

I herein give you a description of the method of flasking and packing a case for a rubber denture according to my method which I call the "optimus," believing it to be the best. Instead of investing the teeth as in the old style, with the teeth imbedded in the upper part of flask, and cast of the mouth in the lower part, I reverse this plan and firmly invest both teeth and model in the lower part of flask, cutting no gates in the anterior part of the mould and but slight gateage in the rear. By this means I am certain that if my articulation was correct before investment, there will be no chance for any change.

In the old method, if for any reason the flask is not closed exactly as it was when the investment was completed, it necessitates grinding the teeth in order to overcome the defect in closing the flask. I think this explains why there is needed so much grinding to restore articulation, which was perfect prior to flasking the case.

In my method, I warm the flask slightly in order to soften the wax to be removed. After removing what one can readily, I heat water to boiling point, and with an old coffee pot, or any vessel with a spout, pour this hot water into the flask and around the teeth, which removes all trace of wax; then placing it over the flame I heat flask and contents sufficiently to pack the rubber, placing the pink rubber around the teeth, or whereever wanted, where it remains; there being no gateage there is no escape for it, and it will be found just where originally placed, with no fear of black rubber showing in spots through the exposed pink, much to the dentist's discomfiture. By leaving the pins in teeth exposed this method enables one to pack the black, or other colored, rubber around them, making a firmer piece. After packing the mould approximately full, I lay a piece of the cloth in which the sheeted rubber comes, over the rubber and press the flask home, after which I separate and remove cloth, which discovers whether too much or too litle rubber has been used for the piece, when one should be governed accordingly. To pack according to my plan necessitates a deep flask, which permits of thick bulk of plaster to firmly hold the teeth in place.

Recapitulation: Invest teeth in wax, and model of jaw in the lower part of flask, backing teeth with plaster as thickly as possible. Bevel plaster in order to separate flask; varnish with separating fluid, placing upper on lower part of flask; fill with plaster; separate flask; remove wax; pack. It is well to remove varnish after separating flask the first time, to prevent the two parts sticking together after heating. In the "Optimus" flask, holes will be found in lower part of flask to permit of escape of steam. If other flasks are used, it is necessary to drill a hole through the plaster at rear end of flask to effect this result or the plaster will blow out of the flask when heated over flame.—*Dental Office and Laboratory.*

SENSE OF FEELING A GUIDE IN FITTING BAND CROWNS.

J. C. Edington.

I do not like to benumb the gum when about to fit a band-crown; the sense of feeling on the part of the patient, serves to indicate when the band is shaped to fit the root just beneath the free margin of the gum. One may impinge on the soft tissue, but it is neither desirable nor necessary to cut into it to any great extent. Indeed, when the band is put on for the final adjustment it should not even blanch the gum; if it does it is pressing the parts and will later cut deeper and induce recession of the affected tissue. When the gum has been wounded in grinding the root or in reducing the band to root-level, the acid of the cement works into the wound and gives rise to discomfort similar to that following the application of salt or vinegar. This of course subsides as the cement sets, but is anything but pleasant while it lasts. To overcome pain thus inadvertently induced and to head off that that may attend the setting of the crown, I dry the root and adjoining gum and paint them with chloropercha. The effect is immediate and the discomfort hardly worthy of mention.—*Dental Office and Laboratory.*

PYORRHEA ALVEOLARIS TREATMENT.

J. H. Nicholson, Ardmore, I. T.

Last summer, in Chicago, I had the great pleasure of examining a number of cases of alveolar pyorrhea, most of which had reached the advanced stages, successfully treated by Dr. Park, and also a number thus treated by Dr. Keefe; and since my return, I am pleased to say, I have my first case to fail in what I verily believe to be a permanent cure, or at least so long as the proper hygienic precautions are observed by the patient.

The method is this: First inject into the pockets a few drops of a fifteen per cent. solution of cocain until the tissues are anesthetized; then with a set of Younger's pyorrhea instruments, as revised by Dr. Good, I go up, if necessary, to the end of the roots, being careful to remove perfectly all of the calcareous deposits at the first sitting, and when I am satisfied there is nothing left, I polish carefully and inject into the pockets a few drops of pure lactic acid two or three times per week until results are produced, which is slow in some cases, but always sure. I then instruct the patient carefully as to the correct way to brush the teeth and gums. To say the least of it, I believe and hope I am effecting cures along this line.—*Dental Era.*

REMOVAL OF CROWN SET WITH GUTTA-PERCHA.

Dr. Benson Sellery.

For the application of heat a very satisfactory little Bunsen can be made by removing the curved platinum point of an abscess syringe, inserting it in a piece of hard rubber tubing of proper diameter. A six-inch length of tubing affords a good hand piece. Attach to gas connection with soft rubber hose—red rubber hose of thin pliable weight is preferable. This can be carried to any part of the mouth with perfect safety.—*Northwestern Dental Journal.*

EDITORIAL

SCOPOLAMINE-MORPHINE METHOD OF INDUCING ANESTHESIA.

The press is at present extolling the so-called new anesthetic scopolamine in terms that certainly seem alluring, and would make one believe that an ideal and absolutely harmless anesthetic had at last been discovered.

That our readers may not be misguided by such reports we will present a few facts regarding the drug in question:

Scopolamine hydrobromide is the salt of an alkaloid obtained from the roots of the scopola plant discovered in Austria by Dr. Scopoli in 1871 and named scopola carniolica in honor of its discoverer. Its action is said to be identical with that of hyocine. In a one or two percent solution it dilates the pupil of the eye producing temporary paralysis of accommodation. It is considered five times the strength of atropine but its effects are not so lasting as those of belladonna. Internally the dose is from one-hundredth of a grain to one-thirtysecond of a grain. It is a cardiac-sedative, decreases the blood pressure but has little effect on the respiration except in toxic doses it produces irregularly rapid breathing.

During the past few years this drug has been used in Europe in conjunction with morphine as an adjuvant to chloroform or other anesthesia and recently has been used with morphine alone as an anesthetic. Used in this way it is administered hypodermically one-one hundreth grain of scopolamine to one-sixth grain of morphine sulphate, the dose being repeated two hours and one hour respectively before beginning the operation. Minor operations have thus been accomplished without pain. For major operations its use is followed by ether or chloroform narcosis. It is said that its use dispels all dread of the coming operation, and advantages claimed for it are that nausea and vomiting are rarely present and no painful after effects are felt as the anesthesia seems to last twenty-four hours, although the patient remains in normal condition.

The objections to its use are hemorrhage, paresis of vital muscles of the larynx and tension of others, and the poisonous effects of the drug on the respiratory and cardiac centres.

It is said that the danger from hemorrhage, due to relaxed tissue, after extraction of teeth is so great that the operation is inadvisable.

The *New York Medical Journal* recently contained an editorial on this method of anesthesia denouncing it as follows:

"The profession has been very tolerant of recent attempts to imitate an ancient and clumsy method of anesthetization by the subcutaneous adminstration of scopolamine and morphine. We believe that in this matter toleration has been carried too far, for it ought to be evident to the mediocre understanding that the procedure is 'treacherous and dangerous,' as Bakes remarks.

"The subject has lately been reviewed critically by De Maurans (*Semaine medicale*, November 8th), who finds abundant justification of his condemnation of the method some months ago, when he called attention to the fact that twelve deaths had been attributed to it. At that time, it seems, those who favored scopolamine-morphine anesthetization complained of the criticism, declaring that cases should be weighed rather than counted. The critic has taken a very effective way of answering those who demurred to his conclusion, namely, by ascertaining the opinions of the six surgeons as to the cause of death in the twelve cases, also their present estimate of the scopolamine-morphine method of inducing anesthesia. With one exception, they have all practically renounced it.

"The poisonous action of scopolamine seems to be exerted alike upon men and women, upon children and the aged, for both sexes and practically all ages figure in the twelve cases of death imputed to the drug, and the nature of the surgical intervention appears to have no appreciable influence in bringing about the fatal result. The truth is that scopolamine is a potent poison to the respiratory and cardiac centres, and its use, while not promising any well defined advantage as an anesthetic, is too dangerous to warrant further attempts to bring it into favor.

It is to be hoped that we shall soon have heard the last of such efforts."

The *Therapeutic Gazette,* Dec., '05, contains an editorial which sums the matter up as follows:—

"From a careful reading of the literature of this subject, as it appears in American and foreign contributions, we believe that the value of this method can be approximately summed up in the following words, namely, that in some patients, particularly in those who are nervous or in those who are known to take ether and chloroform badly, scopolamine-morphine method alone, or preceding the ordinary anesthetics, should be considered as advantageous by the surgeon—in other words, that it will prove of value in selected cases. That it is useful or advisable in all cases would seem doubtful. In other words, the scopolamine-morphine method has a sphere in which it does good work, but it is not of a nature which gives it universality of application."

THE COTTON EXCHANGE.

"The cotton exchange" is an odd appellation for a dental office but, if we are correctly informed, there is one known by that name.

According to the story told recently by a dentist well known for his truth and veracity, it came about in this way: There is a certain prominent dentist as far south as Georgia, whose name we do not care to divulge, an American by birth, although one might guess that he came from Holland stock, who is fond of golf and other less strenuous but equally exhilarating pastimes, and does not like the idea of being overworked by that portion of his large clientele who attempt to force themselves into his service during the hours he wants to take for recreation. When such patients, and they are many, present, it seems that, instead of making a filling at the time, he has been in the habit of placing a treatment in the carious teeth or changing the cotton, if previously treated, and making new appointments. This occurred so frequently that some patients began to wonder if "treating" was a specialty with him and whether they would ever really get their teeth filled. Consequently the practice caused some patients to "think their thoughts" which were finally brought to light in the following manner:

Mrs. A. who had just left this dentist's office met Mrs. B. near the building and the following conversation took place:

"Delighted to meet again, but where are you going Mrs. B?"

Now Mrs. B. was going to this dentist's office also, and after a moment of hesitation said:

"Where am I going? Oh, another visit to 'the cotton exchange.' And where have you been?" Mrs. A. recovering from a fit of laughter replied: "Oh, I'm just returning from a visit to 'the cotton exchange' myself."

Then the appellation took wings and that dental office has since been known by the new name.

ERRATA.

By an oversight of someone, several typographical errors in February's Summary were not corrected. Dr. Patterson's excellent article suffered most. On page 94, fifteenth line from bottom, the word "equator" should be "equation;" page 95, twelfth line from bottom, the word "extraction" should be "extension;" page 96, tenth, twelfth and nineteenth lines from bottom of page, the words "intricated" should read "intoxicated," "insane" should read "inane," and "dissents" should read "deserts;" on page 97, twentieth line from bottom, the word "grab" should be "garb;" page 98, fourteenth line from top, the word "eleminations" should be "eliminatives;" page 99, nineteenth line from bottom, the word "intentionally" should be "internally."

In Dr. Miller's article, page 81, eighth line from bottom, the word "points" should have been "point."

NEW PUBLICATIONS

Orthodontia or Malposition of the Human Teeth, Its Prevention and Remedy. By S. H. Guilford, A. M., D. D. S., Ph. D., Professor of Operative and Prosthetic Dentistry in the Philadelphia Dental College; author of "Nitrous Oxide," etc. Fourth edition. Press of T. C. Davis & Sons, Philadelphia, 1905.

Owing to the rapid advancement in this branch this work has been almost entirely rewritten and most of the former engravings replaced by newer ones.

Several new chapters have been added; an outline of college technic course, construction of appliances, etc.

An outline of the contents will give the reader an idea of the subjects treated in the book. Part I. deals with the etiology of malocclusion (injudicious extractions, delayed eruption, adenoids, etc.,) Facial harmony and occlusal relation, conditions governing correction, extraction, physiology of tooth movement and character of tissues involved, and dynamies of tooth movement.

Part II. Preliminaries and study of cases, materials and construction of appliances, stock appliances and special methods, retaining appliances, and outline of college technic course.

Part III. Treatment of simple cases of irregularities, and complex cases of Irregularities.

The author presents, in brief, appliances and methods of various orthodontists as well as methods of his own, giving his readers their choice of the many. The book is well written and illustrated and comprises 215 pages of text.

SOCIETY

IN RESPECT TO THE MEMORY OF DR. CHARLES C. CHITTENDEN, THE ODONTOLOGICAL SOCIETY OF MADISON ADOPTED THE FOLLOWING RESOLUTIONS ON DECEMBER 16TH:—

WHEREAS, The hand of Providence has removed from us our honored member and president, Dr. Charles C. Chittenden; and

WHEREAS, In his decease we have lost one of the founders of our association, who as president and as an active member until his death evinced a warm interest in its welfare; as president of the National Dental Association, president of the National Association of Dental Examiners, and also president of the State Board of Dental Examiners for many years, he gave freely of his time and energy, sacrificing his health for the advancement and betterment of dental education, and who in many years of practice set before us a worthy example of fidelity to his patients, and kindly interest in his younger professional brethren; therefore, be it

RESOLVED, That we desire to express to his bereaved family our sympathy and sorrow in their affliction and our admiration for the professional and personal qualities of our member; and

RESOLVED, That these resolutions be spread upon the records of our association, a copy sent the family of our departed brother, and others to the dental journals for publication.

W. H. MUELLER,
O. C. SCHMEDEMAN,
F. T. McCONNELL,
Committee.

DENTAL SOCIETY OF THE STATE OF NEW YORK.

The thirty-eighth annual meeting of the New York State Dental Society will be held at Albany, N. Y., Friday and Saturday, May 11 and 12, 1906. Saturday afternoon will be devoted exclusively to clinics.

Any ethical member of the profession having anything of interest to present, or desiring to clinic, will kindly communicate with the clinic committee: F. Messerschmitt, chairman, 1023 Granite building, Rochester, N. Y.; W. D. Tracy, 46 W. Fifty-first street, New York City; G. B. Mitchell, 443 Porter avenue, Buffalo, N. Y.; G. A. Sullivan, 18 Dove street, Albany, N. Y.; F. W. Proseus, 238 Monroe avenue, Rochester, N. Y.

NORTH NEBRASKA DENTAL ASSOCIATION.

The second semi-annual meeting of this society will be held at Norfolk, April 5, 1906.

KENTUCKY STATE DENTAL ASSOCIATION.

The next annual meeting of the Kentucky State Dental Association will convene at Dawson Springs, Ky., June 4, 5 and 6, 1906. We anticipate a most pleasant as well as a profitable meeting and a cordial invitation is extended to the profession.

W. M. RANDALL, Secy,
Louisville, Ky.

INDIANA STATE DENTAL ASSOCIATION.

The Forty-eighth annual meeting of the Indiana State Dental Association will be held at the West Baden & French Lick Springs, Indiana, June 26, 27 and 28, 1906.

The social side of this meeting will be a feature, while the papers and clinics have promise of being the best ever given at this society.

Ethical practitioners are invited to resort, recuperate and reillume with us.

R. A. ADAMS, Sec'y,
Clinton, Ind.

VERMONT STATE DENTAL SOCIETY.

The thirtieth annual meeting of the Vermont State Dental Society will be held in Brattleboro, Vt., May 16, 17 and 18, 1906.

It is expected that we will have the largest attendance of any meeting ever held by this society.

All the leading manufacturers have signified their intention of making an exhibit of their products, and this adds greatly to the success of a convention.

Every progressive dentist should be present.

Special social features for Thursday evening.

THOMAS MOUND, Sec'y,
Rutland, Vt.

LAKE ERIE DENTAL ASSOCIATION.

The annual meeting of the Lake Erie Dental Association will be held at the Hotel Rider, Cambridge Springs, Pa., May 15, 16, 17, 1906.

The committees are working hard to make this an extra fine meeting. All ethical dentists are most cordially invited to attend.

V. H. McALPIN, Sec'y,
Warren, Pa.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS

The next regular meeting of the State Board of Dental Examiners will be held at Minneapolis in the dental department of the State university, on April 3, 4 and 5, 1906.

All applications must be in by Tuesday noon, April 3rd. Application blanks will be furnished upon rejuest by

DR. GEO. S. TODD, Sec'y,
Lake City, Minn.

AFTERMATH

PERSONAL AND MISCELLANY.

New Cover Designs.—The Dental Review, Western Dental Journal, Dental Brief, and American Dental Journal appear in new covers and have a neat and attractive apearance.

San Joaquin Co. (Cal.) Dental Society Organized.—The officers are: Dr. Frank Newton, president; Dr. F. A. McGregor, vice-president; Dr. D. J. Kertchen, secretary and treasurer.

Honored by Dentists.—Members of the Rochester Dental Society held a dinner January 24 in honor of Dr. Joseph Requa, one of the oldest practicing dentists in the state of New York.

Dentist Is Fined for Illegal Practice.—Dr. W. B. Barnett of Victor, Colo., was found guilty of practicing dentistry without a license, January 11, and was fined. He had been found guilty before.

Lorain (O.) County Dental Society.—Officers elected for ensuing year are: President, B. A. Purcell, North Amherst; vice-president, J. L. Ewald, Lorain; secretary-treasurer, D. S. Husted, Oberlin.

Dental Journal Suspends.—The International Dental Journal, edited by Dr. James Truman and published in Philadelphia, has suspended publication. It was a so-called independent dental journal.

Dentists Organize (Southeastern Kansas Dental Association).—Officers elected as follows: President, A. Griffin, Girard; vice-president, G. R. White, Parsons; secretary and treasurer, W. T. Embree of Pittsburg.

North Dakota State Dental Association.—The following officers were elected: President, Dr. Rawlins, Bismarck; vice-president, Dr. Starling, Fargo; secretary, Dr. Sossman, Lisbon; treasurer—Dr. Rowan, Hillsboro.

Southeastern Iowa Dental Association.—Officers elected: President, Dr. J. B. Monfort of Fairfield; vice-president, J. T. Martin of Moulton; secretary, Geo. W. Slingluff of Burlington; treasurer, W. E. Creath of Ottumwa.

Dentist Is Married.—Dr. Frank B. Bostwick and May Eof of Denison, Tex., were married January 23d. Dr. Bostwick was until a short time ago assistant court dentist to the king of Spain. He is now practicing dentistry at Gibraltar.

Gives Up Dentistry.—After being successively a newsboy,' varsity football player and dentist, Dr. Charles J. Jewell of Syracuse, N. Y., will again change his occupation, this time going into the business of manufacturing tasteless and odorless castor oil.

Dental Society of Henry and Stark Counties (Ill.).—President. Dr. J. C. Warnock of Kewanee; vice-president, Dr. J. M. Manton of Buda; secretary, Dr. H. M. Wolf of Kewanee; treasurer, Dr. W. E. Kyle of Kewanee; librarian, Dr. R. W. Sharp of Bradford.

Dentist and Wife Killed.—Dr. J. H. Dye and his wife were instantly killed when an automobile in which they were on their way to Louisville, Ky., from their country home near Beuchels, Ill., was struck by the Florida limited of the Southern railway.

Fires.—The dental office of Dr. J. N. Johnson of Goldsboro, N. C., was gutted by fire January 13, supposed to have had its origin in spontaneous combustion. The loss was fully covered by insurance. Dr. W. E. Elliott of Turtle Creek, Pa., suffered a loss of $300 by fire January 21.

Dentistry in Industrial School.—The state board of control of Iowa has recently instituted a new department at the Industrial school for boys, that of dentistry. Dr. G. A. Stewart of Eddora, Iowa, by appointment, will have an office at the institution, and with one assistant will work there one day of each week.

Rhode Island Dental Society.—Officers were elected as follows: President, Dr. John Stearns; vice-president, Dr. James E. Power of Providence; secretary, Dr. C. A. Carr of Newport; treasurer, Dr. Alfred Speers of Newport; librarian, Dr. F. B. Gleeson; executive committee, Dr. J. J. Dolan, Dr. A. M. Potter and Dr. E. A. Charbonell.

The G. V. Black Dental Club (Minneapolis).—Officers were elected as follows: President, Dr. A. C. Searl of Owatoma, Minn.; Dr. G. D. Moyer of Montevideo, Minn., vice-president, and Dr. R. B. Wilson of St. Paul, secretary and treasurer. For the board of censors, Dr. E. K. Wedelstaedt of Austin, Minn., and W. D. James of Tracy, Minn., were elected.

Some Professional Statistics.—In New York, doctors, lawyers, dentists and druggists are increasing more rapidly than the population. Last year 983 new lawyers were admitted to practice, 705 doctors, 238 dentists and 910 druggists. There are more school teachers than doctors and lawyers, but the school teachers increased in number only 697 during year.

Dentist Returns From Africa.—Dr. Arthur E. Healy of Rockland, Me., has returned from a trip of over three years through South and Central Africa with a portable dentist's outfit. Dr. Healy was the only American on the first through train to Victoria Falls, and was the first American to register at the Victoria Falls hotel on its opening in 1904.

Thirteen Dentists Pass Examination.—The annual report of the state board of registration in dentistry of New Hampshire just filed shows that two examinations of applicants for registration were held during the year. Out of 23 applicants examined, certificates of registration were issued to 13. The board announces that it has been restored to membership in the National Association of Dental Examiners.

Damages for Removing Gold Crown.—Because the National Dental Parlors of Memphis, Tenn., put a gold crown on Mrs. D. V. Cook's tooth and then pulled it off again when she was slow in paying for it, a jury in Judge Laughlin's court has awarded the lady $250 damages. Mrs. Cook stated that she was detained in the dental offices against her will, and that she never had any intention other than to pay for the crown.

Dentist Is Seriously Hurt.— Dr. J. W. Carlton, Spencer, N. C., was severely injured by coming in contact with an electric wire on the streets. The wire had been broken by the heavy ice and had fallen across another wire carrying 1,200 volts of electricity and one end had fallen to the ground. In running to catch a car Dr. Carlton struck his head against the live wire and was knocked into the street in a semi-conscious condition.

Deaths.—Dr. W. G. Browne of Atlanta, Ga., died Jan. 14, of tuberculosis of the spine. Dr. Levi L. Deckard of Middletown, Pa., died Jan. 16 of erysipelas, aged 78 years. Dr. George H. Surft of Syracuse, N. Y., died Jan. 17, of hemorrhage of the brain, aged 52 years. Dr. Jacob Chadsey of Newark, N. J., died Jan. 14, aged 74. Henry M. Lewis of Philadelphia, Pa., president of the S. S. White Dental Mfg. Co., died Jan. 26, of heart trouble.

Governor Appoints Dental Examiners.—Governor Pardee of California has appointed as members of the board of dental examiners the following: Dr. Garrett Newkirk of Pasadena to succeed Dr. Russell H. Cool of San Francisco, and Dr. J. L. Pease of Oakland to succeed Dr. J. M. Dunne of San Francisco.

These appointments, it is expected, will end the dissension that has divided the board for the last eight months.

Vulcanizer Explodes.—The explosion of a vulcanizer in the office of Dr. W. R. Clark of Youngstown, O., almost created a panic in the building. Dr. Clark was manipulating the vulcanizer and had his hands on the levers, when the cap to the boiler flew off. The force was so great that it sent the cap to the ceiling, carrying with it the handles. The screw at the top imbedded itself in the ceiling above. Dr. Clark was leaning backward and thus escaped injury.

Dentist First Man to Volunteer in Civil War.—Dr. William M. DeHart, a Logansport, Ind., dentist, says he was the first man in the United States to enroll as volunteer in the northern army for service in the civil war. He challenges anyone to disprove this claim. DeHart enrolled within an hour after the news came to Logansport of the fall of Fort Sumpter, two days before Lincoln issued his historic call for 75,000 volunteers in the three months' service.

Institute of Dental Pedagogics.—At the thirteenth annual meeting of this society, held in New York, Dec. 28, 29, 30, 1905, the following officers were elected: President, D. R. Stubblefield, Nashville, Tenn.; vice-president, J. H. Kennerly, St. Louis; secretary, W. E. Willmott, Toronto; executive committee: Ellison Hillyer, Brooklyn; L. P. Bethel, Columbus; J. Q. Byram, Indianapolis. Master of exhibits, H. E. Frizell, Pittsburg; master of new teaching facilities, C. E. Jones, Chicago.

Kansas City Dental Society Clinic.—The Kansas City Dental Society is arranging for a record-breaking clinic to be held February 22-23, 1907. Dr. J. P. Root is president and Dr. T. E. Purcell, secretary and chairman of committee as follows: J. D. Patterson, essays; F. G. Worthley, clinics; T. E. Purcell, exhibits; M. C. Carpenter, program; R. M. Seibel, arrangements; D. J. McMillen, reception; C. L. Hungerford, smoker; C. L. Van Fosen, finance; J. W. Hull, publication; F. W. Franklin, railroads.

American Dentistry.—At the annual banquet of the Chicago College of Dental Surgery, held Jan. 13 at the Auditorium, Dr. Nicholas Senn said to the students:

"American dentistry enjoys a well-deserved reputation of preeminence all over the world and it is for you, by your individual work, to maintain this standard and to make your alma mater the greatest college in the world."

Dr. J. D. Patterson, Dr. J. C. K. McClure, Prof. Oliver P. Kinsey, Judge R. S. Tuthill, and Dr. L. S. Tenny also spoke. Dr. Truman W. Brophy, dean of the college, was toastmaster.

Has Suspicions That He Is Leading a Strenuous Life.—Dr. George Edwin Hunt, Indianapolis, Ind., Dean of the Indiana Dental College and professor of operative dentistry, oral hygiene, dental therapeutics and pathology, secretary of the National Association of Dental Faculties, writer of short stories, editor of the Delta Sigma Delta Dental Fraternity magazine, "Desmos"; automobilist, secretary of the Citizens' League, a political reform organization of Indianapolis, etc., etc., has accepted the editorship of "The Columbian," a new monthly publication devoted to the interests of the well-known Columbia Club of Indianapolis, "Everybody Works But Edwin."

Body of Dentist's Murderer Found.—The body of Henry Folkenson, murderer of Dr. W. I. Drake, a prominent Minneapolis dentist, was found, Jan. 26, in a corn field near the outskirts of Ashley, N. D. indications pointed to the fact that he ended his own life. Folkenson claimed Dr. Drake owed him 45 cents for a small job. Drake denied owing the debt, and Folkenson became very angry, threatening vengeance. He left Drake's office, where the quarrel occurred. He returned a short time afterward with a revolver, and entering the office, shot Drake. He fired two shots, which took effect in Drake's right breast and stomach. The victim fell to the floor, dying in ten minutes.

Ohio State Dental Board Reports—The report of the Ohio state board of dental examiners for the past year, filed with the governor, shows that 303 certificates were issued last year, 260 to graduates of Ohio colleges, 22 upon examination, and 18 under the exemption law. Twenty-two claimed certificates under the exemption law, but in three cases their claims were not allowed. Three certificates were duplicates.

To this date there have been 3,985 certificates issued in Ohio, but by reason of death, removals, etc., the secretary estimates that between 2,600 and 2,700 dentists are practicing in the state now.

Four convictions for violating the law were secured. One was acquitted and one case is still pending. The board recommends amendments to the law so that the regular examinations will not fall on legal holidays; that the board may have power to revoke certificates for misrepresenting as to right to use degrees, etc., and making all appointments run for 5 years.

The receipts were $4,459.33, the expenses $2,903.48, and the balance, $1,555.85.

Indian Territory Dental Bill.—Copies of a bill which has been introduced in congress in the interests of Indian Territory has been received at the government offices, in Muskoke, I. T. It provides for the regulation of the practice of dentistry in the territory and was introduced by Congressman Campbell of Kansas. It stipulates that the Dental Association of Indian Territory shall send to the chief justice of the court of appeals the names of ten practicing dentists, from which that official is to appoint an examining board of five members. This board is to hold meetings twice each year on the first Wednesday in January and the first Wednesday in July, at which times dentists desiring to practice in Indian Territory are to appear before the board and take the prescribed examination. Any graduate of an accredited dental school who has been practicing in Indian Territory ten years may be given a license without examination. Any graduate of an accredited dental school who has practiced two years in the territory is entitled to a license. All others must pass the required examination before being admitted to practice. One member of the board is to retire each year, his place to be filled by the chief justice. The regulations prescribed in this bill are similar to those governing the practice of medicine and pharmacy in Indian Territory. At present there are no restrictions placed on the practice of dentistry and anyone who chooses may open up an office.

An Antiseptic Two-Step and March.—The composer of "Margery," "Jolly General," "Our Director," etc., has named his latest two-step and march, "Sanitol," and has dedicated it to the president of the Sanitol company. It is said to be receiving great favor, for the music is delightful and full of life. (Being an antiseptic two-step does not prevent the music being full of life). It is expected that every man, woman and child will learn it by heart, humming the strain while brushing the teeth and keeping time with the motions of the toothbrush. If at the end of the tune the teeth are not thoroughly clean, D. C. ad lib. q. s. We understand that copies are being sent to dentists throughout the country, with the compliments of the president (of the Sanitol Co.). The editor has not yet received a copy, but when he has to two-step, or side-step, he usually don't wait for music; he has a quickstep of his own that he uses on such occasions.

Patents of Interest to Dentists, Recently Granted.—808606, holder for toothpicks and similar articles, Charles F. Hamel, Toledo, O.; 808105, dentifrice, George W. Morse, Jersey City, Mo.; 808841, apparatus for the manufacture of toothpicks, Henry S. Hopper, Detroit, Mich.; 808935, handle for dental flasks, Theodore G. Lewis, Buffalo, N. Y.; 808690, dental silk box, Otto C. Schulz, Chicago, Ill.; 809365, dental tool, Adam W. Feltmann, Chicago, Ill.

Copies of above patents may be obtained for ten cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

Announcement—The board of trustees of Barnes university of St. Louis, Mo., announces the following as the present faculty and officers of the dental department: George H. Owen, D. D. S., dean; Otto J. Fruth, D. D. S.; S. H. Voyles, D. D. S.; C. O. Simpson, D. D. S.; W. B. Arthur, D. D. S.; T. G. Donnell, D. D. S.; W. H. Love, D. D. S.; C. P. Strawn, D. D. S. Members of the executive committee: Doctors Owen, Fruth and Voyles. The new building of the dental department will be completed about June 1, 1906, and will be of modern appointments.—John M. Wood, President Board of Trustees of Barnes University.

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

SUCCESSFUL GOLD FILLINGS.

BY H. B. TILESTON, M. D., D. D. S., LOUISVILLE, KENTUCKY.

Professor of Operative Dentistry, Louisville College of Dentistry, Louisville, Kentucky.

In a paper, "The Adhesive Filling," by Dr. Joseph Head, published in *The Cosmos* for November, 1905, an excellent method of combining gold and oxyphosphate of zinc cement is described which he admits is not new, but is offered as a means of reducing the deplorable number of failures in gold fillings, which he places as high as 50 per cent., even in the hands of good operators.

This estimate may be rather high; it undoubtedly is high for some classes of cavities, but, taking all classes together, it is probably not excessive.

The conclusion as to success or failure will depend, however, upon what may fairly be accounted as such. If our clientele should become universally possessed of the conviction that all fillings made of materials themselves permanent ought to be everlasting the results would be rather damaging to the reputation of dentists and to operative dentistry as a therapeutic measure.

If only those operations which, performed during childhood, preserve the teeth throughout a long lifetime, are to be accounted successful, then indeed is the estimate of fifty per cent. of failures much too small. Ninety per cent would be nearer the truth.

Just how long a filling should save a tooth from secondary caries to be rated a successful filling is hard to determine.

There are so many conditions to be taken into account, and each case differs so in some ways from another, that no standard of judgment can be fixed and no hard and fast rules of procedure in filling teeth can be laid down as applicable to all cases.

Every operator should be eclectic in his practice. With the single purpose of stopping the ravages of decay in human teeth, he should study carefully and intelligently the conditions surrounding each particular case coming under his care and choose the method best suited to the needs of that particular case.

And there are many good methods to choose from. The suggestion made by Dr. Hood is one of them, but it is not applicable to all cases, nor in the hands of all operators. It is true the cement used in this way helps to retain the gold in the cavity and limits secondary caries in a measure if repair is made in time, but the hermetic sealing by the cement does not extend to the margins.

After all, the margins constitute the most important part of fillings. If margins are bad the whole filling is bad. The only hope for success in filling teeth with gold lies in perfect adaptation of the gold to the cavity margins.

The problem then resolves itself into the one main question, How may the margins be most perfectly sealed?

It certainly requires great skill to build cohesive gold into perfect adaptation to cavity margins. It requires greater skill to build crystal gold tightly against enamel margins. More skill is requisite in either case than is possessed by the majority of operators. With non-cohesive gold properly used, perfect adaptation to walls and margins is comparatively easy.

That cavities can be thoroughly sealed with non-cohesive gold is proven by observation of fillings made by some of the old school operators, who used this material exclusively, many such fillings having preserved teeth perfectly for practically a lifetime.

There is no reason why a non-cohesive gold filling properly made in a cavity properly prepared in the occlusal surface of a molar should not be a permanent operation. I have observed many such fillings that have been in place for periods ranging from ten to fifty years, without a blemish.

But non-cohesive gold also has its limitations.

Making fillings entirely of this material in cavities involving the approximo-occlusal surfaces of molars and bicuspids, for instance, is a very different proposition from that presented in simple occlusal cavities. Our forebears did it because they had to. We don't attempt it because we don't have to. We know something better. Our modern ideas of the importance of restoring the full mesio-distal diameter and the approximal contact point of these teeth demands the use of cohesive gold in at least the occlusal third or half of these cavities.

The difficulty of getting cohesive gold into perfect sealing contact with the margins of the gingival third of cavities of this class is well recognized. Some operators claim to be able to do it. The majority will fail.

Uncertainty of adaptation is changed to certainty and much time saved by the use of non-cohesive gold in the gingival third or half of cavities of this class.

The procedure is much simplified by using cylinders rolled upon a small triangular-pointed broach or instrument from flat, smooth ribbons folded of number four foil and of a width to make a cylinder about one-third longer than the depth of the cavity from the margin to the axial wall. The diameter of cylinders will vary, according to the size of the cavity to be filled, from those rolled from one-sixth to those containing one-half a sheet of number four foil. Cases calling for cylinders containing more than half a sheet are rare.

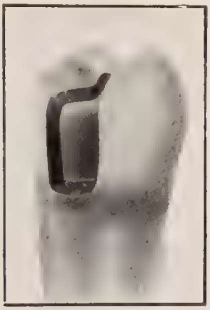


Fig. 1.

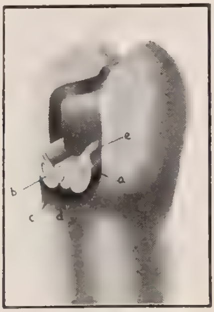


Fig. 2.

In filling a mesio-occlusal cavity in a bicuspid like that shown in Fig. I., a cylinder of suitable size, usually one made from one-third of a sheet, is lightly grasped with the carriers and deftly placed without mussing it, in the bucco-gingival or linguo-gingival angle, whichever presents most favorably, with the smooth convex surface lying against the buccal or lingual and gingival walls one end abutting snugly against the axial wall and the other protruding from the cavity into the inter-proximal space as shown at *a*, Fig. 2. With the side of the carriers or some other suitable instrument, this cylinder is pressed gently into the angle and mostly against the buccal wall, but no effort made to condense it as yet. Another cylinder is placed in the same careful way into the opposite angle, *b* Fig. 2. A third cylinder is now thrust between the two already in place, *c* Fig. 2, and with a flat-ended plugger of suitable size is forced straight down against the gingival wall, acting as a wedge to force the other two cylinders against the buccal and lingual walls and as a key to hold all in place.

A word of caution just here as to the kind of gold used for making cylinders. Unless the gold is absolutely non-cohesive the third cylinder, *c*, is liable to stick to *a* and *b* as it rubs over them and fail to reach the gingival wall at *d* resulting in a fault that will escape the observation of the operator, but that means failure. The sticking of the third cylinder will also have a tendency to drag the two lateral cylinders away from the buccal and lingual walls, as shown at *e*, Fig. 2, and if they have been made of semi-cohesive gold they will have hardened sufficiently to rock up from the gingival wall when forced again to place.

The most satisfactory non-cohesive gold I have found is Abbey's. Cylinders made from this foil will glide over each other without the least tendency to stick.

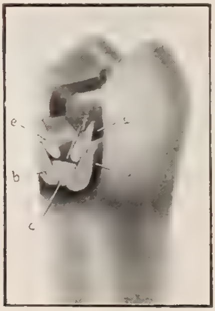


Fig. 3.

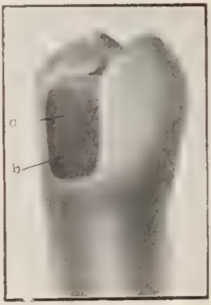


Fig. 4.

The three cylinders may now be partially condensed with a broad convex-faced hand-plugger, and if the size of the cavity makes it advisable, two other cylinders are placed, one against the buccal and the other against the lingual wall, as shown in Fig. 3, *d* and *e*. The remainder of the cavity is filled with cohesive gold, a start being made between the last two cylinders at *f* with some form of crystal gold, which readily coheres, when well annealed, to the non-cohesive gold. Watt's, DeTrey's, or the S. S. White, moss fibre serve equally well.

The step on the occlusal is filled and the contour made with any form of cohesive gold that suits the preference of the operator.

The condensing of the crystal gold upon and between the non-cohesive cylinders, with either hand or mallet force, will continually condense the cylinders and force them tightly against the ctvity walls. As soon as the gold is securely anchored into the step the protruding cylinders are condensed towards the axial wall with a foot-plugger and mallet and farther condensed with burnishers, the soft gold spreading under these forces and closely approximating the walls and overlapping the margins. This condensing should be done before the contour is completed, as the mass of gold protruding from the cavity is misleading to the eye in establishing the desired contour, and for the further reason that this part of the filling can be more easily reached with plugger and burnisher before the contour is built out than afterwards.

In Fig. 4 is shown the completed filling, the non-cohesive gold indicated to the gingival of the dotted line (*b*) and the cohesive to the occlusal (*a*). It will be seen that the non-cohesive gold covers those margins where recurrent caries is most likely to begin.

I am satisfied that non-cohesive gold properly manipulated will reduce the liability of failure in this class of cases to a minimum.

The method of procedure here shown is not new nor is it applicable in exactly this manner, to all cases. My purpose is to describe graphically a method of using non-cohesive gold which makes adaptation not only possible but simple and easy and which is capable of variation to suit different cases.

* * *

MOUTH-BREATHING DUE TO NASAL OBSTRUCTIONS.*

BY D. W. FLINT, D. D. S., PITTSBURG, PENNSYLVANIA.

Professor of Orthodontia, Pittsburgh Dental College, Department of Western University of Pennsylvania.

A few weeks ago there appeared in our newspapers the results of a test of the eyes of the children in one of our public schools, by Dr. Kirk, and he found that 20 per cent of those examined needed glasses. Then I thought, what a blessing to humanity it would be if some one could give just one illustrated lecture to those teachers, who are so near to our children, so that they could inform the parents of the children who are suffering from closed nares, whatever the cause might be; for any one who is but a moderate observer can detect a child suffering from mouth-breathing. And yet how many dentists, either through lack of knowledge or carelessness, fail to have their patients sent to a rhinologist for treatment. I have in mind now a young girl whose parents had not been sufficiently urged to have her adenoids removed. Had the mother been shown the dangers associated with such a condition, I am sure something would have been done as a preventive. How much this girl would have been benefited had she only had her adenoids removed at 8, the models at 12 years of age I will show on the screen later; then you will see how the muscles through tension have pinched the upper arch until you can scarcely get your finger up into the vault. Also notice the force of the inclined planes of the upper cusps, how it has made the lowers all tip in lingually.

From works on rhinology, I find that Meyer of Copenhagen, in 1868, was the first man to write on these growths; and it is only a little over 20 years ago that any of the evil effects on the teeth were shown. There are two varieties—the first consists of spongy stalactic projections from the vault of the pharynx; the second consists of smooth, fibrous tumors of irregular shape. They are highly vascular, full of lymph cells and a follicular structure like that of the oral tonsils.

The effects of these growths are so far-reaching that we are learning more and more each day as to the evils, not only to the teeth in destroying occlusion and the facial lines, but in their relation to the eyes, ears and thorax. In one of the works, I read, one relates that in 426 cases of adenoids he found six deaf-mutes. He cured one and relieved another, both as to speech and hearing, by removing the growths. From another writer we learn that, in the statistics gathered from fifty institutions of the deaf, dumb, blind, feeble-minded, and insane asylums, 60 per cent. of the inmates have some deformity or irregularity of the upper jaw, and that *all* have one or more of the conditions which cause mouth-breathing. This means simply that where any condition of degeneracy exists, resulting in blindness, deafness, mutism or idiocy, the very reason for this degeneracy exists in the weakened, defective tissues in some place, which in the nose develops into adenoids, producing abnormal breathing in turn. It was not over three weeks ago that a lady asked me if one of the little girls for whom I was correcting her mal-occlusion was an idiot. She simply had adenoids and enlarged tonsils; and yet a person unacquainted with the disease could tell at a glance one of the symptoms. Nerve specialists tell us that the V-shaped arch tends to increase or develop a mental defect by limiting the cranial capacity; in other words, as the vault becomes constricted, the pressure on the vomer becomes so great that the cranial bones contiguous with it are pushed higher up in the cranial vault, thus constricting its contens. Cases of varying mental derangement have thus resulted even so bad as to cause incurable insanity. You will see here that the straight septum would be more damaging than a deflected one.

---

*Read before the Odontological Society of Western Pennsylvania, December, 1905.

ETIOLOGY.

This is a disease of childhood, and cases have been reported where nursing children have had to have them removed. Dr. Sluder of St. Louis, in lecturing on adenoids, stated that he had done so in numerous cases. I will show you slides of the youngest case of corrected malocclusion after the adenoids have been removed. The work was done in four weeks, by Dr. Mendell, one of our lady orthodontia specialists. The boy will never know what it is to have a receding chin, and all the other attendant evils, because the first permanent molars will erupt mesio-distally normal.

Oftentimes several children in the same family are subject to these growths; they are always to be looked for in children with hypertrophic rhinitis, enlarged faucial tonsils, and high-arched or cleft palates.

Beginning with babyhood, they are active until the 15th or 16th year, when they atrophy. Between the ages of 5 and 8 they are the most apt to begin.

These cases are characterized by—

1. Parted lips, due to dropping of lower jaw.

2. A short and ineffective upper lip, which fails in any way to offer resistance to the incisors which are being pushed out by lateral muscular pressure.

3. A lengthening of both upper and lower incisors, but more especially the latter, due perhaps to a loss of function.

4. Prominent eyeballs (at times).

5. Obliteration of the normal lines of expression of the face (apathetic), and a consequent appearance of listlessness and inferiority.

6. Sub-development of the lower arch.

7. There is a thickness of speech and nasal intonation. As Chaucer said, "He intones in his nose."

8. These children are dull and absent-minded, and have the appearance of being inattentive, which may be due to their mental dullness or impaired hearing, or both.

9. They have one cold after another in the head.

10. Receding chin.

11. A thickened lower lip owing to its being pushed up into the space between the upper and lower incisors—and, perhaps, the extra function of moistening the lips.

12. Owing to lack of nutriment, the whole superior maxillary bones are smaller than they should be.

13. Contracted upper arch, due to pressure when the bones are quite pliable; the constant pressure day and night must of necessity produce such a condition.

14. Last, but not least, *protruding upper incisors*—for this is about the first condition that we see every hour of the day when walking in a crowd.

15. In general the nose, mouth, and chin are out of balance.

The causes of mouth-breathing are several. "Adenoids, enlarged tonsils and hypertrophy all obstruct the nose in the same way, making mouth-breathers. A child is born with a strumous or syphilitic diathesis, or is idiotic; certain tissues as a result develop excessively. The tonsils enlarge and adenoids or hypertrophy of the nose develops, because the very tissues, being of inferior quality, take the place of normal tissue and makes the child one of lessened vitality and inherent weakness. The nares as a result become occluded.

"A deflected septum usually begins in children due to falls and hard bumps on the nose when they are learning to walk. The cartilage, due to accident, bends either to one side or the other, and thus assumes this unnatural position. When thus changed the natural support to the arch is somewhat lessened, and if the patient be in a climate and be subject to conditions such as would produce hypertrophies we can easily see how the vault of the hard palate would be the more easily pushed up owing to the force of the buccinator muscles owing to the lessened resistance."—*Kohler.*

TREATMENT.

In the treatment, the first, and, by all means the most important, is the surgical removal of the *cause,* namely, these growths. Whenever we have a constitutional defect, that must always be corrected or alleviated. Many weary hours have been spent throughout years in doing the mechanical work of correcting the deformity, only to find the work "go back" simply because the operative cause was not taken into account. If only one thing can be done, by all means have the adenoids *thoroughly* removed by a rhinologist, and nature will work wonders by way of developing an arch *better* fitted to give to each tooth a place. I may add right here that the work of the rhinologist is not complete unless the patients can close the lips naturally or normally, and this they cannot do in a large percentage of cases unless *occlusion* of the teeth has been established. Thus we see, that in order that the best results physically and to the physiognomy may accrue to the patient, they must first have their breathing made normal by the surgical assistance of the rhinologist and the mechanical assistance of the orthodontist.

The plan of treatment depends largely on the age and how much the face is "out of balance." At times the whole lower jaw needs to be brought forward by "jumping the bite;" this is done by widening the upper arch and first moving the molars distally by first ligating the arch to the anterior teeth and tightening the nuts in front of the sheaths on the clamp bands on molars, then the bicuspids in turn, and finally the anterior six. This latter is done by the use of Baker's anchorage, using rubber bands as an intermaxillary force. Then the patient bites forward, bringing the inclined planes into normal occlusion. This plan is followed in children and is the ideal method where the chin is very receding. Retention is made by use of the inclined planes soldered to cemented clamp bands on molars, or, in cases, bicuspids, and *kept* there for a long, "or longer," period, until all tendency for a return has disappeared.

The other plan is by using the Baker anchorage in moving the upper arch back, and the lower forward equalizing in a measure the inharmony and establishing occlusion.

The old plan of extracting the upper first bicuspids and carrying back the anterior teeth by stationary anchorage has been entirely abandoned by those who believe that a face is only best with its type when the full complement of teeth are present and in normal alignment. Facial art in this first division of Class II. (Angle classification) plays an important part. We can see how hideous our after results, and we must always remember we are changing the faces of human beings created in the image of God, would be were the patient, with such a plan of treatment, one who had a nose that already had a tendency to incline upwards. The angle of the nose with the lip would be more obtuse by such a procedure, and consequently the nose would look to be at a more hideous angle with the face. I will point out two or three examples of this in the faces shown on the screen.

It will be remembered that, in cases of this class, one of the characteristics is a short and ineffective upper lip. To correct this the patient is given instructions to manipulate by pulling with the finger, and voluntarily moving the lip down and out. After this exercising before retiring for the night, adhesive plasters in strips can be placed from lip to lip, thus compelling the patient to breathe through the nose, and if this is not sufficient, resort must be had to some form of bandage that will hold the lower jaw up.

In conclusion, I want to show you by the slides that these cases of mouth-breathing can be diagnosed without ever seeing the patient, but by simply examining good models, or, if the patient be present, without any examination of the nose, but simply by the relationship of the first permanent molars and the character of the superior incisors.

THE STATEMENT.

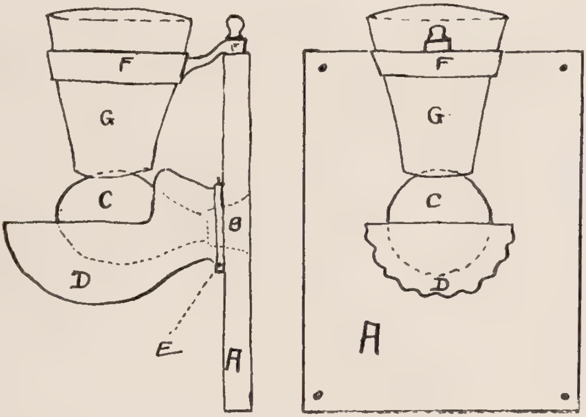
If the lower first molar, in its relationship to the upper first molar, is distal to normal and the upper incisors are protruding like a fan, you may be sure your patient has, or had, nasal obstructions, which in turn have caused mouth-breathing.

REGULAR CONTRIBUTIONS

AN ELECTRIC WATER HEATER.

BY DEWEY D. SMITH, D. D. S., SANDUSKY, OHIO.

No doubt there are other dentists who have been looking for some kind of a durable water-heater, easy to make and with but little cost.



A—The foundation is an oak piece 7x9x1 inch, which I sandpapered and then weather-oaked, later rubbing with paraffine dissolved in gasoline, to give it a Flemish oak effect, and, too, making it so that water splashing upon it would not spot the oak.

B—A wall socket countersunk in from the rear of the board.

C—A 16-candle-power electric bulb.

D—A green reflector.

E—Brass rim to hold reflector. Cut out the inner rim, drill holes and nail to the board.

F—Glass-holder taken from the dental bracket

G—Shell drinking glass. (If a glass can be found with a concavity in the bottom, to catch more heat, so much the better; then a lower candle-power lamp could be used).

The wires on the back of the board are laid in grooves. In case a switchboard is not used, a small switch could be placed just below the lamp. Or the reflector omitted and the unscrewing of the lamp would act as a switch.

Instead of this method some use a large earthen vase with a lamp fastened in the bottom with plaster of Paris.

Others use the heat from their resistance-coil, in cutting down a high power current.

PROSTHETIC DENTISTRY.*

BY DR. E. T. WRIGHT, RICHMOND, VIRGINIA.

The subject of prosthetic dentistry while not so old as these hills, is never-the-less, a very old subject, and until within the decade just closed the writings upon this subject, and the demonstrations of its principals, have been many and valuable, but within the past few years, there has been so little written, or said, with the exception of what has been done in compiling text-books, that one may well stop and consider whether prosthesis is a finished matter, and all the questions arising out of it, have been answered or passed, as unprofitable. It is not a good arguary for the future of a thing when discussion stops; it is rather a very bad sign, an intelligent discussion may well be called the breath of progress.

Thus chiefly through intelligent discussion and the multiplication of minor suggestions and experiences, brought finally into a coherent whole, that system and theories of various sorts are built up, and upon which progress stands in its onward march. When the profession stops writing and talking about artificial plates, or any kindred dental matter, then the main support to excellence will fall, and a period of retrogression will set in for that branch of our work, in particular, and sooner or later the baneful effects thereof will begin to reach upon branches of our work, and bring it into the disrepute which our neglect, or disdain, has brought the other. My desire, then, is to rekindle the wavering fires of the plate worker, and to offer such reasons as I may for the present very lamentable case into which prosthesis has come, with a suggested remedy.

---

*Read before the Virginia State Dental Society, Lynchburg, August, 1905.

That there is reason for this change, and lack of interest in the art of plate making, I will admit, the advent of bridge-work which is so fascinating to many of us and the greater knowledge of the rules governing the preservation of the natural organs, have served to limit the indications for artificial dentures, to the extent that in many offices they are rarely made, and some operators do not engage for this class of service at all, but there are other reasons which I wish to point out why plate making is now far below what it was some years ago, and while doing so I wish to remark that this is the first instance in the history of dentistry, in which it can be said to have stood still, or gone backward. The uncleanliness of this work has made it objectionable to some, and they have not given it the attention it deserves, or that their talents would warrant, but this objection is only apparent, and dependent entirely upon the tidiness of the operator. Some do so little of this work, that their "hands get out," and it ever afterwards is a wasting drudgery to be gotten over with as soon as possible, right or wrong, but the greater reason of all for the present low standard of plate-work is the advent of plain teeth, and pink rubber, the two making a combination, in the hands of the most of us, too terrible to mention lightly. Yes, it is these plain teeth, with their concomitant pink rubber, that is doing the greatest harm to us, as well as to the people. Consider the words "Plain Teeth." Plain is a most suggestive word as applied to the teeth in question. It so readily suggests ugliness to the mind. We speak of old Maids, and yellow dogs, as plain, and along with them many other unesthetic things, so that when the word "plain" is used, our minds naturally revert to the unbeautiful, maybe the cheap, or common things about us.

I have a dog that is said to be a *plain cur*. I speak of him because the ready adaptation of his appetite to the case in hand, reminds me of the proud case of pink rubber.

Did you ever see a modern wooden leg at close range? How bashfully pink it is. It would not grow a hair for anything, and stands ready to fit all comers, male or female. In course of events it may support a negro in his elegant leisure, or feed a cannibal in his jungle. So it is with the beautiful and inexact pink rubber gums to plain teeth. It is no respector of temperaments. It makes its own temperaments, and if the guilty wearer objects to its color, why let him object. It may be some comfort to him, but we may proudly tell him that he has purchased something which looks, it is true, to have been made for the other fellow, yet the *possibilities* of plain teeth and pink rubber gums is so great in the variety of the adaptation of these materials, that he must overlook the discrepancy in gum color, we may confess that we never saw the other fellow, but he is possibly somewhere, and as now we mostly use this class of denture, and disclaim the endless variety of gum sections, ready in the factories to be sent out to us upon demand, and he may well thank his star he is let off so easy, and is not forced to go for the rest of his life, with his lips skinned back for the better view of the public, and as a punishment to himself for ever losing his natural organs.

It does not seem inappropriate at this time, in view of the foregoing and the small number noticed of recently constructed plates carrying porcelain gums, to ask why we use so many plain teeth in place of gum sections, when it is a fact well known, that the manufacturers stand ready to supply us with practically anything we need in gum sections.

Why, then, I ask, do we use rubber gums so often, knowing when we do so, that as they are generally made there is but slight resemblance in them to the natural gum, when in gum sections any gum color can be found? I say, we know these things, and certainly if we do not it is high time we were learning them.

The answer given generally to the above question, is a specious one. It is said that in the use of plain teeth we have latitude to work, freedom to design and execute, and that the operator is enabled to reproduce the temperatmental characteristics of the patient, in the artificial substitute. If this is true, then plain teeth with these dead-line gums, are all we need, but how near does this come to the truth in the things we see? Is it a fact that the high ideals set fort in the above mentioned claims, are the true motives for using plain teeth, and dead-line gums, or is it in not rather something else?

It seems scarcely necessary to mention the inappropriateness of pink rubber gums, you never made a case probably without observing the discrepancy in color between the natural gum and the artificial substitute. Why do we use it so much? Do we answer that it is the best combination that we can find and that by intelligent and skilful effort we trust to produce good results, similar in effect to those shown in the black and white pictures of the text-books, with the contours and tooth spacing correct and the gum color approximately so?

Suppose you have done all that, have you done so well as you could do, suppose you have gum sections properly and accurately designed? If you have not investigated you will be surprised when you learn the great rarity in the S. S. White establishment alone, blocks which have been molded from dies reproducing practically every imaginable type, and combination, and true to life as found. If these gum sections are to be had of the factories, and we want them, why do we not find them at the depots? I will give you the answer of a depot man: "The dentists," he said, "do not call for them as they once did. They ask for 'plain teeth,." Now the case seems to be before us, and is about as follows: The profession mainly wants plain teeth, and the bulk of the stock carried is such, so that the operator who wishes to work gum sections must send away for them, or take something which is probably entirely unlike what his case demands. This condition of affairs is, I maintain, lamentable in the extreme, and can but result in still greater decline in prosthetic excellence, for this reason, that the correct manipulation of pink rubber, even if it were an acceptable substitute for porcelain when correctly done, is a tedious undertaking, and so far as my observation goes, is not done to any appreciable extent. It is at this point that my objections to plain teeth have weight, if at all, therefore, I remark that the indiscrimate use of plain teeth, has come about through a misunderstanding of the case, and that the indifferent supply of teeth in the small depots, is *due entirely to the changes in the methods of the prosthetist.*

To make myself clear at this point let us revert to the time when porcelain was mainly used for gums, which condition of affairs continued up to about fifteen years ago. Previous to that time there were but few operators in this country who used vegetable compounds of any kind for the gum sections of plates, and plain teeth were used without the ornamentation they now carry upon their cervix. It was not until Dr. Jno. Allen of New York and Dr. W. W. Evans of Washington, and other eminent prosthetists had demonstrated the possibilities of artificial replacements in restoring facial contours with continuous gum, celluloid, and rubber, that plain teeth attracted more than a passing notice. There has never been any serious objection urged against the use of a continuous gum as a suitable substitute in the mouth, the cost it entailed was all sufficient to prevent its general adoption. I saw a case worn by Dr. Allen himself, which had cheek supports on either side as large as walnuts. Dr. W. W. Evans, about the same time was devoting himself to the use of celluloid as a substitute for continuous gum. His cases are still shown in the text-books, illustrating the correct methods of working that magnificent compound, celluloid, in combination with plain teeth. The greatest objection to celluloid is its propensity to discolor if the surface is broken after removal from the heater. Dr. Evans did not break the surfaces, except to cut off the surplus, and possibly thin the heel a trifle, a brush wheel was all it needed beyond this. You know the process, and it is needless to go into it here, suffice it to say that celluloid and pink rubber treated as Dr. Evans treated them, are at their best, and does not discolor for a long time, and of all the various makes of pink rubber there is not one with so life like a color as celluloid. Continuous gum and celluloid have come, and in the main gone, and in their passage have left a legacy of no mean proportion, they have left plain teeth and pink rubber, and these have served to show that *some kind* of gum section to a piece, can be added after the teeth have been set in place, and the *claim* is advanced that the operator can keep closer to the temperament of the patient by using them, that age and incidental personal and family peculiarities, can be reproduced with an accuracy beyond the possibilities of gum sections, and that with all, porcelain gums are a useless bother.

The foregoing is the doctrine advanced by the magnificent prosthetists above mentioned, and their school some years ago, which in a sense they made good by their rational efforts with these materials, but I believe it has never been taught that the mere use of plain teeth with a meaningless projection of pink rubber can ever be classed as accurate manipulation, or correct substitution, and as accuracy of detail is what we desire it may be well for us to review our practice, and see if we have done wisely in driving gum sections from the depots and substituting plain teeth and pink rubber therefor. I do not blame any one for choosing plain teeth as between them and the gum sections we find in the depots now, but I do wish to say that they do not carry the choice stock now they were wont to do. The manufacturers have the dies set, and every demand upon them for temperamental classification in gum section will be readily met, when the demand is made for them, but is the demand made? No, it is not. To illustrate what class of teeth are called for at the depots I will mention that a dealer considered it a good joke to buy a few sets of 14's and 28's with slightly irregular incisors to keep a certain dentist quiet, as he said, and further that he would not expect to sell them to any one else. The contention I make then, is, that operators have for a reason, discarded in too great measure, the admirable gum section, which is, under proper handling susceptible of being made into artistic substitutes for the natural organs, and have substituted for them a far less accurate tooth form, and still less accurate gum section, and that the tendency to this sort of practice is greatly on the increase to the serious detriment of the prosthetic art.

PRESIDENT'S ADDRESS.*

BY DR. R. S. SIMPSON, RICHMOND, VIRGINIA.

The thirty-sixth annual meeting of the Virginia State Dental Association is at hand. The founders of our society builded well, and today we are reaping the results of their good work, for this society has done the greater part in elevating our profession in the state. We have reason to be proud of our past achievements, and all glory to those pioneers who bore the burden and heat of the day. Theirs was no small task. With no text-books to amount to anything; theories undeveloped; no adequate equipment; no one to make their appliances; the general public not appreciating what could be done for them; worse yet, socially ostracising them.

Is it any wonder that theirs was a difficult task? But daring to perserve because they were right, having skill and dexterity as the equipment, they laid a sronger foundation than they ever hoped for, and successive generations have builded a superstructure thereon that is the pride of the whole world, namely, *The American Dentist.*

---

*Read before the Virginia State Dental Society, Lynchburg, Virginia, August, 1905.

What is he? What has he done? What can he do? What does he know? How much money has he? These questions have been asked, and are being asked until now we at last hear what we have always longed for: viz, *Who is he?*

Heretofore he has been socially ostracised because he was crude; had no culture, education and refinement. He was not conversant with latin, greek, higher mathematics and literature, and because the rank and file justified this accusation, the whole profession suffered in consequence. Being a new profession, the individuals were judged as a whole.

I shall not here attempt to explain why such conditions of the profession existed, as you are all familiar with them. Medicine and even the ministry had a still harder and longer battle for recognition. Education has been looked upon as meaning a knowledge of belles-letters and literature. The lawyer, teacher and minister learned these because they were the essential part of his profession, the part he practised. All others were regarded as crude. The scientific man might have spent more time on his education; might have combined more educational points than the other, but all the same he was no more than a skilled mechanic. He could not talk elegantly, quoting the classics. The dentist therefore was not socially eligible, and justly so. Those who enjoyed social preferment were not conversant with the sciences, therefore did not find the dentist congenial. The dentist was not conversant with belles-letters, therefore there was no reason in the world why those socially received should exert themselves to comprehend what a dentist had to talk about. It was easier to let him alone, which was done.

There has been, however, a tide in the affairs of men. Never in the history of education has so much time been devoted to the sciences. Every college in the land has established courses for the B. S., or Bachelor of Science degree. Polytechnic Institutes are being founded on the plan of the Mass. Institute of Technology, better known as The Boston Polytechnic Institute. Carnegies, Rockefellers, Schwabs, Wanamakers and Morgans see the drift of the tide, and are proud to found these institutes, and still prouder when they bear their names. Peoria, Ill., has one with a four million dollar foundation.

America today owes her prestage and success to scientific research. Our civil mining, mechanical and electrical engineers are in demand every where, and are received with open arms. Success in dollars and cents seem to appear at their touch. Every electric mine, smelting plant, refinery and packing establishment, baking powder factory, fertilizer factory, and all such establishments now have scientifically educated men to save waste.

Science is the price of commercial success. The world recognizes it. Commercial success or its product, money, is the spinal column of society. Society is now looking to the field of science for its lions. Society itself does nothing; it depends upon worship of success for its existence. Strange as it may seem, those who have made a success of life in a way approve of society, are flattered at society's advance, although they are from their success greater than society. Genuine success means *intrinsic worth.* A man may have intrinsic worth, and no culture; so also can a type-writer the size of a barrel be a good one, even though the parts are unpolished and not symetrically shaped. This clumsy affair may do effective work, even though it takes time and trouble, yet if we had a sum of money to invest in one, would we buy, for the same price, such a machine? or the modern, compact, highly polished and ornamental one, all parts nickled and lacquered; one that is automatic and takes no time nor trouble to work; *ornamental* as well as *useful?*

To continue the comparison, suppose the ornamental and useful machine had been manufactured for years, and all its parts duplicated and kept in stock by a company with a *reputation* back of it; would we buy the clumsy affair, even under the same conditions? Much less would we, if it had no reputation, and had been manufactured only for a short while.

Law, medicine, the ministry, have been in existence for years, have as professions enviable reputations, and their history are companies that need no recommendations. Notable exceptions have appeared in their ranks, but these were judged and are judged, as individuals, but their line of history is untarnished and as a profession, each is truly cultured. And I would have you notice that each has literary attainments as its foundations. They were ornamental as well as useful.

There can be no true profession without culture. The simple name profession means nothing; and the world has justly accepted as a requisite of culture, literary attainments.

Dentistry as a profession has not been in existence many years. The world is observing what is its reputation, and the colleges and state boards are a company that have at least been placed on an unpredjudiced and systematic basis. Dentistry is distinctly a scientific profession. Were all the trades, arts, sciences and professions done away with, the world would not be the loser, for from the ranks of dentistry every one could be reproduced, and with *honor too.*

Our profession has made such rapid progress along practical lines, that we have not time to look to the ornamental features. We have been treating symptoms as they arise, and these symptons have heretofore demanded the remedy of *intrinsic worth.* The most predjudicial do not deny that we have intrinsic worth, but as I have stated before, *intrinsic worth* does not necessarily carry with it culture, and because the rank and file of our profession have not been cultured, the whole profession has suffered for it. The world has not taken the trouble to judge each man as an individual. Heretofore it has not been necessary.

Law, medicine, the ministry, have been accepted for their face value, but so many unworthy ones have flocked into their ranks, that in self preservation the world is beginning to judge the individual, not the whole.

The engineering profession, civil mining, mechanical, electrical, are even newer than dentistry. Culture is not necessary for success in these. The world has found it necessary to discriminate against them as a whole, selecting the individual.

Now is dentistry's opportunity. Can we measure up to it? Our profession has chafed under this just ostracism, thinking no one else has been so treated. Some of us think we are ostracised because we are dentists, when it is in truth the individual who is ostracised. The lawyer, civil, mining, mechanical, electrical engineer, does not come in contact in practice with cultured society, therefore does not have so great a desire for social preferment so plainly brought before them. They may spend a life time in their profession, and never have a conversation with a cultured woman. Their dealings are necessarily with men. Thank God, ours are principally with *women.* We meet and admire them in our practice, and desire to know them socially.

I shall not enter into a discussion here, but shall simply state *a priori,* that *true culture and refinement* necessarily depends upon women, as an essential factor, and a man's social position depends upon her estimate of him.

We fit up our offices so she will approve of them; we practice neatness of person and dress for her benefit; we become skilled in our profession, so we may render her the best service; we strive for success to gain her approval. Women love harmony, and one discordant note makes the song a failure.

Dentistry has sung for her many beautiful notes, viz., *intrinsic worth,* a scientific and learned profession, and gratitude; a benefactor of mankind; an appeal to her vanity; congenial surroundings; neatness of person and dress; gentleness; pecuniary compensation; and from contact with her culture.

In these things we have her appoval equally with any other profession, probably more so. We have then the opportunity of becoming her ideal profession. To become so, she makes one other demand. And now gentlemen, shall we at the goal lose in the race for lack of one factor, literary attainments, the ability to *listen* and *talk well?* The finishing touches to an otherwise useful and ornamental life.

And that brings us to the greatly discussed question before our colleges. One on which our future depends, *preliminary education.* As I have stated to you, law, medicine, the ministry, have been diluted that the world now judges them as individuals. Men have rushed into them as well as into dentistry, who could only read and write.

I have no patience with those dentists who claim that they are socially ostracised because of their professoin. *They are ostracised because of their lack of culture, and they would be ostracised were they in any other profession.*

At the beginning of their careers dentists make more money than any other profession, came in contact with more cultured people, and these facts give them aspirations which are to them but "Apples of Sodom," which became as ashes in their mouths, because of their lack of preliminary training. For our future good, we should make a careful selection of those who shall enter our ranks. The colleges are largely in favor of this, and long ago would have increased the entrance requirements, if the profession would have endorsed such action, by supporting and encouraging only schools of highest requirements.

It is not simply a question of raising our standards. The world is discriminating against the badly prepared student, and as a practitioner he goes to the advertising quack.

Women of refinement would prefer ordinary work done by a refined and educated man, rather than the best work done by a man of coarse manners.

To our shame, too, some of us encourage our own relatives to enter our profession, when we well know that they cannot reflect credit upon it. They are proud to have their relatives in the profession, because the profession honors the relative. The true way is to select and encourage only those who will reflect credit upon us. Mechanical skill is by no means the only requisite.

I realize that I am addressing men who are practitioners, whose only hope, if they are deficient, is in post graduate work. We can become Andy Johnsons, and this work will become both pleasant as well as profitable.

As a profession, we already stand on an equal footing with any other, but we must not stop here. The others are advancing. We under-rate ourselves, in some particulars, viewing our own deficiencies with a hyper-critical eye. We think an A. B. graduate easily talks and writes essays. It is hard for us, and we think it easy for him. Therefore we do not try. The colossal mistake, of our rank and file. The very trial is a schooling itself. The A. B. has to labor over it, and where there in no labor there is no excellence. We must labor for ourselves, and for our profession. Our founders accomplished much and under difficulties. We are better educated, therefore can accomplish more. Let us do what our hands find to do.

Let us build bowers along the way, wherein memory shall delight to sit down and muse, as she travels along life's journey.

We have done the rough work until we are skilled and do it more easily and more excellently. Let us now embellish it. Let us plant flowers along the way whose fragrance will cheer those who come after us. Let us not live for self alone. Let us not live objectless and aimless.

"Lives of great men all remind us,
We can make our lives sublime,
And departing leave behind us
Footprints on the sands of time."

"Let us then be up and doing,
With a heart for any fate.,
Still achieving, still pursuing,
Learn to labor and to wait."

"Splendid discontent with Chaos made the world.
Set suns in place and filled all space
With stars that whirl and whirl. And from the
discontent of man the worlds' best progress springs,
Then feed the flame (from God it came)
Until we mount on wings."

AN APPEAL.*

BY F. W. STIFF, D. D. S., RICHMOND, VIRGINIA.

Believing that to do good is better than to get good; that to prevent disease is better than to cure disease; that while great strides have been made in the art of curative dentistry, comparatively little has been done in the greater field of preventive dentistry.

Believing that the mass of dental practitioners concern themselves almost exclusively with diseased conditions as they are presented to them, seeming to care little for great measures which might be taken to prevent these conditions; believing firmly also, that the spirit of selfishness or commercialism does not invariably dominate our profession and that the best in us is often dormant and needs only to be aroused to do great things for our fellows and that if fully aroused and united in a righteous cause our power will be irresistible.

Believing that the mass of dental practitioners concern themers, in the interest of humanity, that you unite with me in a closer bond of union in the great work of preventive dentistry.

It is a slow, tedious task to educate a people, but, "many hands make light work" and "he is thrice armed whose cause is just." Do not let us deceive ourselves. While the mass of the people are densely ignorant as to what is involved in this question of preventive dentistry, if aroused by persistent efforts properly directed they will respond in time and our labors will be rewarded. And do not think that little or nothing is being done toward this end. Scores of papers were read during the past year on some phase of the subject in this country and hours of valuable time spent in the discussion of ways and means in our societies.

---

*Read before the Virginia State Dental Society, August, 1905.

Some of our best men are giving their time and most earnest thought to it. I have just reported to the N. D. A. which met at Buffalo last week the result of work assigned me at Asheville, in 1903, regarding the establishment of a chair on "Oral Hygiene, Prophylaxis and Dental Pathology" in the medical colleges of this country. Twenty of these schools already teach this subject to the young men they are sending out that they may know more about the oral cavity and be better able to cope with general disease. Other schools are considering the subject and further efforts will be made to introduce this work in the medical schools. 250 Medical journals were requested to publish the resolution and to make commendatory comments on the matter, which many of them did.

It is proposed to prepare a text-book for use in the schools, for it is an acknowledged fact that to teach a people a thing you must teach it to the children. You can't persuade one adult in ten to use a brush regularly, habitually; you can't do it,—you don't do it yourself if you didn't do it as a child.

My one idea when I begun this work some years ago was, and is no less so now, to teach the school children all about their teeth, during their whole school life, the need for a perfectly clean mouth, the intelligent use of the brush and floss silk and when they are old they will not depart from it. Not only that, but they will, in coming generations, supplement at home the teacher's instruction at school, having been previously taught themselves, making a double tuition in oral prophylaxis.

I said that I wanted you to unite with me in a closer bond. What is it? This: That you pledge me your earnest support in the work of the N. D. A. Committee on Oral Hygiene.

I appeal to your sense of duty. It is a duty that you owe to yourself and to your patient to make every last operation better than the one before. It is your duty, because of your professional knowledge, to teach your patient how to prevent dental diseases. It is your duty to lend your name, influence and means, if necessary, to hasten the time when dental disorders shall have been reduced to the minimum; remembering as an incentive and encouragement, that, as you conserve and preserve the dental cavity in a healthy, clean, immune condition, so do you assist in the elimination of general disease, working hand in hand with the general practitioner of medicine.

We are often distressed and depressed and perplexed and discouraged when we see the great neglect of oral cleanliness and the indifference of the public to the proper care of the teeth, as we are about many things in life which we seem impotent to correct.

"There is a time when the pulse lies low in the bosom, and beats low in the veins; when the spirit sleeps the sleep which apparently knows no waking, sleeps in its home of clay and the windows are shut; the doors hung with the invisible crepe of melancholy; when we wish the golden sunshine, pitchy darkness, and wish to fancy clouds where no clouds be.

"What shall raise the spirit? What shall make the heart beat music again and the pulses throb through all the myriad-thronged halls in the house of life? What shall make the sun kiss the eastern hills again for us with all his awakening glances, and the night overflow with moonlight, love and flowers?

"There is only one stimulant that never intoxicates—DUTY. Duty puts a clear sky over every man, into which the skylark of happiness always goes singing."

Do you wish to know how you may help; what your duty is?

Join the "P. D" Club. Be one of the growing band of men in the States who are determined to establish the era of preventive dentistry.

It is another side of your professional life which we desire you to cultivate. One side is to cure diease of today and support your family by receiving your contemporaries from the result of their neglect; the other and brighter side, is to prevent disease of the future and to be an unending blessing to your posterity.

This appeal is to be made in the journals throughout the Union and at dental meetings wherever and whenever held in the future.

You are not asked to wear a button or a badge or to sign a constitution to pay membership fees. We want to inscribe the letters "P. D." in your brain that you may remember, and on your heart that you may do.

* * *

DENTAL HYGIENE.*

BY WM. PILCHER, PETERSBURG, VIRGINIA.

The subject of dental hygiene covers a very wide field and is indeed a great and interesting one, as the mouth is an index to some extent, of the condition of the system, especially the alimentary tract.

Therefore hygienic conditions of the oral cavity cannot be well maintained, unless the general health is fair.

In this paper I shall confine myself to the subject as it relates to patients in a normal condition, as in their accustomed health, that is, more emphatically speaking, free from acute disease.

Viewing them from a hygienic standpoint what conditions do we find in the mouths into which we are accustomed to look?

It is rare that we find a mouth full of sound teeth, mucous surfaces beautifully healthy and no accumulations of sordes or calculi clinging about the necks of the teeth. More frequently we find the teeth being destroyed by caries and in many instances the mouth has a very unkept appearance.

What is the 'trouble? Does not the puplic know anything about the proper care of the teeth?

The observance of rules governing prophylaxis or preventive dentistry is no new thing. People have cleansed their mouths and teeth for years past, with a view to preserving the teeth.

I have made quite an effort to find out when the tooth-brush came into use, but have gotten no light on the subject.

I have consulted the State library, and encyclopedia and have asked of people and cannot say that the tooth-brush was or was not in use in the time of the Caesars.

The cause of caries has long been known in a general way by the laity. The use of the tooth-brush is necessary to refinement.

Booker Washington is credited with having said "That when a negro began to use a tooth-brush then he had some hopes of him."

People cleanse their teeth as they do their hands and face, in order to feel comfortable.

---

*Read before the Virginia State Dental Society, Lynchburg, Virginia, August, 1905.

You can scarcely find a patient that does not own a toothbrush. But alas! with the care given by the large majority, what do we find. Frequently the labial surfaces of the anterior teeth quite well polished and the posterior teeth apparently overlooked.

And when you remark to the patient that greater care should be taken in cleansing the teeth; he looks surprised and promptly informs you that he brushes them three times a day.

It may be true that he performs such a duty and has a comfortable feeling and a clear conscience, but the fact is often before you that the duty is only partially performed.

We must conclude that, while most people know that their teeth should be kept clean, they do not know how to accomplish that feat, nor do they even know when it has been done.

It is remarkable to see how much abuse some teeth will stand.

Almost covered with the remains of the last meal and presenting a condition in which you could scarcely think they would last a few months; they remain and do good service.

While on the other hand you see teeth giving away rapidly in the mouth of patients who from an aesthetic standpoint have beautifully clean mouths in comparison to the class just mentioned.

Why this difference? I don't know absolutely, but sometimes the filthy looking mouth is chemically in a better condition than the one that has had a superficial cleansing.

In the one case it may be that in the process of mastication that the old soil on the teeth is often replaced by new before fermentation sets in, while in the other the particles of starch foods may be as much or more abundant in the approximal spaces and therefore leave the teeth in just as much danger from local cause as in the first case.

This condition shows that people do not know when their teeth are clean.

We find also various pathological conditions of the gums, some due to local and some to systemic disorders. Some of these conditions are very obscure.

You are frequently asked the question by your patient: "Why do my gums bleed so easily. Why are they so red and puffed up around the teeth?" You see no apparent cause, how definite can be your reply.

The patient wants a remedy and a quick and magic-like one.

Tell me what to use on them. It does not often occur to the patient that his or her mouth is dirty enough to keep the gums inflamed.

That removing the accumulations from the necks of the teeth will do much toward reducing the inflammation.

People like to apply remedies whether they do any good or not.

All they desire is for someone in whom they have confidence to tell them to use this or that remedy for almost any complaint, they begin at once.

The public has great faith in drugs. The people do not strive to aid nature. When anything is the matter they want to take something.

One of our nearby country physicians, not long since, met a negro in the road. The negro stood waiting for him with a meditative look on his face. He let the doctor pass by him a few yards and then called, "Oh, Boss!" Running up to the doctor's buggy he says: "I's in trouble and I wants to ax you a question."

He had a complaint and he thought he had a remedy and only wished some advice and he would forthwith begin to use it. "What is it?" asked the doctor. Says the negro: "Is the Boston Reperial good for the Running Range?"

Drugs may help along but prevention is the better cure.

I'll venture to say that the examination of the mouths of the gentlemen present would reveal the fact that dentists' mouths are kept better than other peoples' of the same intelligence, Why? Because they know how. They know where the danger is and it becomes a second nature to keep the acid forming accumulations from remaining long on the teeth.

If this be a fact, then, more knowledge is what the people need in order to preserve their teeth.

What is the ideal condition to be maintained in the mouth having begun to receive the permanent teeth.

We cannot hope for much improvement in the quality or any in the formation of the teeth. We should strive to keep them always as they were received. I am speaking of the individual tooth, of course malplaced teeth and irregularities have to be looked after.

What can we hope for? Can we reach our ideal, well maybe so, but at any rate a great deal has been accomplished and past results encourage us to press forward.

Not many years ago workers in match factories expected at some time to be affected with phosphor-necrosis.

There is now a dentist employed at each of the three large factories in this country and by placing the operatives under their care, phosphor-necrosis has been practically stamped out. This is done by using the proper remedies and precaution to prevent inception.

These patients come for inspection every thirty days.

How well could we take care of our patients' teeth if we could carefully examine their mouths twelve times a year, and they were under control and forced to follow our instructions.

We might keep off the dangerous accumulations of calculus and probably find out what caused its presence in this or that case.

Whether the trouble is brought on by improper diet, too much red meat, pepper or other high seasonings. Not enough water I often believe is a prolific cause for serumal calculus. The secretions of some patients are not fluid enough to hold the lime salts in solution.

I have made a practice of late of asking the patients afflicted with serumal calculus if they drank much water, and almost invariably they answer, no. We cannot care for our patients as a nurse does a child, nor can we follow them up as is done in the match factories.

They must learn to appreciate the dental organs, and how to care for them, and do most of the work themselves.

Try to persuade them to drink plenty of water; nearly a gallon of fluid in 24 hours.

Without water there cannot be proper drainage. Imagine a sewer with an insufficient supply of water. Healthy people take a bountiful supply of fluid into their systems and good water will fill the bill.

The patient should be impressed with the fact that an absolutely smooth tooth will not decay. That the rough places hold accumulations of starchy foods which ferment forming acids, and that it is the acid formed in the mouth that does the damage, and not those that you are in the habit of taking into your mouth, except in rare instances.

If the strict observance of the laws governing dental hygiene and prophylaxis produce results worthy of deep consideration, and it truly does, how can we enlighten our patients on the subject? For it is our duty as much as lieth within us to do so The interested and intelligent patient has already heeded the warnings of decayed teeth and the short lectures from his dentist.

In most cases the knowledge has been acquired after considerable damage has been done.

Therefore the children should be properly instructed, in order that the work of caring for the teeth can commence as early as the work of destruction.

But how can the instruction be given the children? Best by the mothers. Can you educate the mothers of today? Hardly. But the children of today will be the parents of the next generation.

Our chairman, Dr. F. W. Stiff, has for some years been deeply interested in the proper instruction of the public school children and a chapter on Dental Hygiene has been introduced into the common school physiology.

This would have a tendency to awaken a great deal of interest in the teeth and is an admirable plan. Let us not be idle, however, while waiting for great things, and let us use every opportunity by short lectures at our chairs and by conversation, to impress the importance of the care of the dental organs, especially upon the young.

DENTAL LEGISLATION.*

BY H. W. CAMPBELL, SUFFOLK, VIRGINIA.

The subject of the dental legislation is one of interest to every member of the profession as well as to those who are contemplating entering the ranks of dentistry. The interest that attaches to this subject is necessarily different as the point of view differs. The student views the law as something conjured up by older men to harass and torment him when he has finished his college course and received his diploma. The general practitioner looks upon the law as a wholesome measure which is intended to prevent the exploitation of the public by incompetent people. The law expresses to our mind two prominent facts: First, a prohibition; and second, a penalty. The law commands certain things and demands that its command be complied with. The commands of the law prohibiting the doing of certain things is based on the assumption that the legislative branch of the government considers the thing or things prohibited to be against the best interest of society and, therefore, requiring certain laws to govern them. We will divest our minds of all laws other than those that govern men, and prescribe a course of action for certain individuals. These human laws are subject to change and, at best, are imperfect; in fact, we may say broadly that all laws made by men are defective and faulty from the very nature of the case. Man is an imperfect being and, therefore, cannot formulate perfect statutes. There has always been a desire for law and order in the hearts of men and a striving after better laws to regulate society. The growth of statute law has been slow but steady since the foundation of human government. This is necessarily the case as the activities and endeavors of men enlarge and diversify. One hundred years ago there was very little legislation on the subject of steam and electric transportation, telegraph and telephone regulations, and hundreds of other subjects, among which we can mention dental legislation. Dental legislation in this state is not more than twenty-five years old and since the birth of the statute it has been changed and amended five times, and at present it needs to be changed in some important particulars. Legislation is never intended to make men perfect. As the law, itself, is imperfect it would be an absurd proposition to try to make men perfect by legislation. What the dental act is to accomplish is to reduce the number of incompetent men who are yearly graduated and turned out as competent persons who should be licensed by the State to practice dentistry.

---

*Read before the Virginia State Dental Society, Lynchburg, Virginia, August, 1905.

The law of the state of Virginia, taken as a whole, is as good as the law of any other state. There are, however, a number of defects which might be corrected in the Virginia law. One of the principal subjects that calls for reformation in the law is that of *revocation of certificates which have been granted to persons who are practicing illegally or who have been guilty of certain practices which would debar them from decent society, such as felony or false representations to their patients.* To have a law that would come any where near fulfilling the requirements in such cases would be to take a long step forward in right legislation for the state of Virginia. For instance, if a man is notoriously crooked and disreputable, if he makes false statements in advertising, if he makes false representations to his patients regarding work that he is performing for them, the law should require that his certificate be revoked, upon sufficient evidence before the full Board.

THE TEMPORARY CERTIFICATE.

The temporary certificate is another source of annoyance in quite a number of cases. The Board has recently been through quite a lengthy legal fight with Callahan, who violated the law in the use of the temporary certificate. The case has, no doubt, come before the attention of quite a number of the members of this association. The case, in brief, was as follows: A candidate presented himself for temporary certificate several months after the Board had closed its annual meeting. A temporary certificate was granted, upon an examination by a member of the Board. The candidate, at the expiration of the period for which the temporary certificate was issued, came before the Board at its annual meeting. Failing to make the required average, he was thrown by the Board, whereupon, he refused to take the action of the Board as final in the matter and continued to practice, claiming that the temporary certificate issued him by a member of the Board was equal to an examination. After considerable annoyance, trouble and expense the case went to the Supreme Court and was decided in favor of the Board. The Supreme Court's decision in this case, established the status of the temporary certificate. Still, there is more or less trouble in issuing these certificates, for a member of the Board to take up these cases and examine them, giving candidates a written examination, and then having to go through the same work again at the annual session. I am of the opinion that the temporary certificate should be abolished. The expenses of the Board are considerable. The time taken by the men in going to and from the meeting is valuable. These men who have been examiners for years have, without compensation, used their talent and their time in the work of the Board. Men who are able to occupy positions on the Board are usually able to make as much as the average dentist, and probably more, at their chairs. But for the good of the profession and the upbuilding of dentistry in general these men, from time to time, give up, at least, four or five days of their time and devote this time, exclusively, to the examination of candidates to practice dentistry in the state of Virginia. This work was not so heavy seven or eight years ago when there were not so many men seeking admission into the ranks of dentistry. Today it is becoming heavier as the years go by, and the profession will, unquestionably, have to provide some means of support for the Board other than what it now receives from the fees of the candidates who come before the Board for examination. The men should have, at least, a per diem of five dollars while they are conducting the examination. The Board should be provided with funds amply sufficient to prosecute any cases of illegal practice in the state. It is a matter of fact, and a matter thoroughly understood by the members of the Board, that there is illegal practice of dentistry in the State of Virginia. These cases are sometimes on the border lines of other states and sometimes in remote parts of the state where it is impossible for Examiners to reach them. The Board should have funds sufficient to employ counsel and, if necessary, to employ detectives in the work of prosecuting these parties who deliberately and wilfully violate the dental laws of the State of Virginia. As the matter now stands, the Board is not able to do this in the manner in which it should be done. In the case that I have just cited to you, where the Board prosecuted a man for violating the law in using the temporary certificate illegally, the Board was compelled to pay out about three hundred and fifty dollars for the prosecution of this case. This leaves the treasury of the Board in a depleted condition.

THE NATIONAL ASSOCIATION OF EXAMINERS.

The National Association of Examiners, as is well known, is not a legislative body and has nothing to do with legislation in any state or territory in the United States. It is simply an advisory body, a body intended primarily for the purpose of interchanging ideas as to methods of examination.

It is necessary for the Board to keep in touch with the National Association of Examiners. The National Association of Examiners have for years done good work along the line of looking into the working and teaching ability of the various schools in the United States, and a committee on colleges of the National Association of Examiners have done thorough, and are

are still doing good work, along this line. At the last session of the Examiners the body constituted a committee on tabulation whose duty it is to examine into the statistics of the examinations of all the Boards constituting the National Association of Examiners and to ascertain what per cent. of the colleges had graduates before the various Boards, what per cent. of failures there were, on what subject the candidates failed, and as to whether the candidates moved from one state to another after having failed before one Board. In other words, to give definite information as to what disposition the various Boards of the United States make of all of the men who come before them. This information is of great importance, more importance, really, than would appear upon the surface. If this work is thoroughly done, as, no doubt, it will be by the Association, it will be worth a great deal, not only to the profession at large, but to the colleges, because it will make them more careful in the selection of material out of which to make dentists. The National Association of Examiners have, unquestionably, done much to raise the standard of dental education in the United States, not that they have been teachers, at all, but that they have carefully looked into the product of the schools as it has come before them. I think that I may assert with absolute assurance that the men who constitute the Examiners in the United States are equal in ability with those who constitute the faculties in the various colleges in this country.

I consider it necessary that Virginia have a representative in the Examiners' Association. We must have one there. It requires money to do this, consequently, we should prepare ourselves for the emergency, and in order to provide the amount necessary to prosecute the work of the Board in a manner in keeping with its dignity and importance, I respectively suggest that this Association appoint a committee to look into the advisability of changing the law at the next meeting of the legislature, in the following particular: that every dentist in the state of Virginia be required at the expiration of one year to register his certificate, as the pharmacists do now, and that the Secretary of the State Board be instructed to issue to him a card through the mail, stating the fact that he has been registered for the year, and that this card of re-registration be accompanied by the fee of one dollar, which shall be paid into the treasury of the Board, and that the Treasurer of the board make an itemized statement of the financial condition of the treasury to the Virginia State Dental Association at its annual meetings. This change in the law would then make each dentist in the state bear his proportion of the maintenance of the law as it now receives its proportion of protection from it. Every dentist should be willing to bear his proportion of the expense in maintaining the dignity and the efficiency of the Board in its efforts to enforce obedience to the dental law.

ALVEOLAR DENTAL HEMORRHAGE.

BY E. M. FISHER, D. D. S., COLUMBUS, OHIO.

The causes of dental alveolar hemorrhage are not always the same in the different cases, although the extraction of teeth is the most common. Among other causes I will mention:

Weakness of the blood vessels and a deficiency in the coagulating element in the blood; the patient may be suffering from some constitutional disease, the hemorrhage being one of the symptoms and excessive use of alcoholic stimulants. Again it seems that the hemorrhage diathesis is found frequently to prevail in certain families and in those families in which you generally find constitutional diseases or a weakened condition of some kind.

In such cases we need to approach the removal of a tooth with great caution and not remove it at all, save as a last resort.

There are many ways by which this kind of hemorrhage has been successfully treated. Nearly every dentist, I presume, has his favorite remedy, the virtues of which are superior to any he has yet used.

Among the mechanical devices used to prevent hemorrhage after the extraction of teeth, are spider's web, beeswax, compound plaster, wooden plugs, ligation, or if the hemorrhage is from the tooth socket of a single rooted tooth, the return of the tooth coated with warm beeswax makes a very good obstruction to prevent the flow of blood.

Among the most important medicinal agents we find tannic acid, gallic acid, perchlorid of iron, persulphate of iron or Monsel's solution, ferric alum, antipyrin, ergot, and adrenalin chlorid.

I am of the opinion that the number of cases of hemorrhage would be greatly reduced if more caution were given in extracting teeth, to not lacerate the gums and sliver the process in such a manner that many more weeks are often required for the gums to heal than would be required if those parts were left unmarred. Use care in the removal of a tooth, then have the patient wash the mouth with water quite warm, which will induce bleeding from the wound. A normal reaction will generally follow very soon with cessation of the hemorrhage.

But even the most painstaking operator is often confronted with cases which call for his careful and prompt attention. It may seem strange, but statistics show that the greatest number of deaths caused by hemorrhage are from the extraction of teeth.

There seems to be some difference of opinion among some of our most prominent dentists as to the best remedy to be used. I might say a few words as to the merits and demerits of some of the medicaments used as styptics.

Tannic acid with blood produces tannate of gelatin; the tannin unites with the fibrin and forms this insoluble compound that will stand the pressure of an artery against it. Monsel's solution has been condemned for the want of strength of the coagulum which is easily penetrated by an artery.

The use of Monsel's solution may be objected to on account of its caustic effect, sloughing following its application and its use internally for any length of time produces constipation, while tannic acid is at least free from producing one of these effects, that of sloughing.

Gallic acid possibly has advantages over tannic acid when taken internally for the reason that its action is more prompt. Tannic acid is changed into gallic acid when taken up by the blood, which consumes more time for its desired action.

Gallic acid does not produce constipation in such a marked degree as most other styptics.

Perchlorid of iron finds favor with many dentists because of its caustic effect and which decomposes the partial clot in the bottom of the cavity, and further they claim it to be a more powerful astringent than even tannic acid. Others find the escharotic effect will do great damage in certain cases. Dr. Brophy, of Chicago, claims for Monsel's solution the superiority as a styptic. He claims it is not an irritant and is not in any sense objectionable when brought in contact with the tissues of the mouth. It will produce a marked discoloration of the parts, but that discoloration is not due to an escharotic effect.

Ergot causes contraction of the involuntary muscular fibers of the small blood vessels and is very serviceable in the hemorrhagic diathesis where there is a want of tenacity in the blood vessels. Small doses if long continued, are dangerous, producing pain in the stomach, thirst, vomiting, gangrene of the lower extremities, spasms and death.

We notice cases on record where severe hemorrhage of the oral cavity was of a general character, blood oozing out of the gums and in fact all over the mouth.

The best course to pursue, in my judgment, in such cases would be to place the patient's feet in hot water, wash the mouth thoroughly with hot water, give internally gallic acid in 3 gr. doses, then paint the bleeding parts with "styptic colloidion," composed of a saturated solution of tannin and gun cotton, and which is highly recommended for its styptic and deodorizing properties, as it solidifies blood and albumen by mere contact and can be applied directly with a camel-hair brush. No irritation follows its use. Water will not dissolve it. This dressing should be removed by an ether and alcohol solution.

Adrenalin chlorid is a preparation of supra renal gland and is at present much in favor as a hemostatic. In many severe cases of alveolar hemorrhage, and other forms of hemorrhage, it has been successfully employed, where no other agent would give satisfactory results. It may be obtained in ounce bottles in a one to one-thousand solution. It is claimed to be the most powerful hemostatic and styptic known.

The position of a patient suffering from alveolar dental hemorrhage should be an upright one, thereby securing the benefit of gravity.

It is not always easy to tell if our patient will be troubled with hemorrhage after the extraction of a tooth. To lay down any definite rules along this line would be impossible. However, there are a few forewarnings, the most of which I have mentioned in giving the causes of this trouble.

After extraction it is well to notice color of the blood. If of the arterial kind in appearance and it does not cease to flow in a reasonable time, take measures to stop the bleeding. The countenance of the patient may often give warning, or you may notice a lack of contractility in the vessels that would induce a hemorrhagic condition. We find the hemorrhagic condition most frequently in males.

The principal thing is to be prepared for severe alveolar hemorrhage, for when it does occur it requires prompt action, and if what I have written proves of use particularly to our younger men in the profession, I shall feel that restating some of the well known phases of hemorrhage has not been without some profit.

SOME PATHOLOGICAL CHANGES IN ALVEOLAR ABSCESSES AND THEIR TREATMENTS.*

BY GEO. W. COOK, B. S., D. D. S., CHICAGO, ILLINOIS.

Since the investigations of Virchow and Max Schultz all biological phenomena, both in health and disease, are becoming more and more understood as the result of investigation of the morphological as well as the physiological activities of cellular life. Therefore the treatment of alveolar abscesses, as well as that of any other disease process, can only be accomplished when the true fundamental knowledge of cell activity is thoroughly studied.

The onset of a disease process, like that of an alveolar abscess, involves tissue changes in three different kinds of cellular organizations. In certain forms of tissue changes, like that of inflammation, there appears an increased transudation of fluid from the hyperemic blood vessels, causing the lymphatic space of the tissue to become immediately filled with fluid; there is then at once established an edematous condition in the tissue in which leucocytes transmigrate through the vessel walls, and can be found manifesting their amoeboid movement in the interspaces of the cells of the tissue.

In many of the infectious processes the leucocytes attack and destroy the bacteria which are found in the lymphatic spaces, especially if these bacteria are of the coccus form. If this condition goes on for any length of time in alveolar abscesses, and especially those that are produced by the mild virulent forms of bacteria, there is a mild form of inflammation, and the disorganization of the cellular tissues surrounding the apical end of the roots of teeth is very slow, and it may be weeks and even months before a true typical and well-defined alveolar abscess is established. From the period that the bacterial irritant has entered the field of liability of inflammation, to the time that the tooth manifests all the signs and symptoms previous to the form of an abscess, it may be possible for other conditions to appear in the nervous reflex of the parts adjacent to the tooth.

---

*Read before the Nebraska State Dental Society, May, 1905.

I cannot better illustrate this point to you than to relate a case which was one of an upper cuspid tooth, where the root canal had been filled for a great many years. Something like a year and a half or two years before the abscess had fully established its identity at the end of the root, the patient suffered pain in a number of teeth in the upper jaw, some quite remote from the affected part. The tissue around the affected tooth was quite free from any painful condition, or even a slight soreness in the part at the end of the root, and almost before any symptoms appeared in this particular locality a fistulous opening had been established. The bacterial findings in the pus discharged was that of a staphlococcus and the bacillus of pulp gangrene. A microscopic examination of the tissue showed transmigrated leucocytes, some of which contained dead bacteria that were evidently destroyed through phagocytic action.

It frequently happens that these leucocytes pick up the bacteria that are in the lymph space and carry them to the lymph nodes, where the bacteria, provided their virulency is not too great, are destroyed and their effects completely lost. If such a condition goes on for any considerable time, the connective tissue in the vicinity of the root of the tooth becomes very much impaired and is found to contain large quantities of leucocytes, which are found to be somewhat in accordance with the degrees of inflammation in that particular tissue. The karyokinetic figures are very much increased, which Virchow considered to be due to a hyper-nutrition. But, as a matter of fact, the cells are not over-nourished and the condition is the result of stimulation, which is probably due to certain chemical elements from the bacterial cells, or the liberation of certain chemical compounds from the tissue cells; these are designated as inflammatory exudates and vary in accordance with the severity of the inflammation, which is always variable in accordance with the reactivity of the tissues involved and the virulency of the bacteria present. The fibrin exudate found in such fluid is, as a rule, an indication of more or less acute activity of the tissue, which brings about a more or less fibrous coagulation and is an indication of active degeneration of certain cells. It might be said in this connection that certain fibrin ferment has been separated from bacterial cultures. Of course it is a difficult matter to say positively, at this time, whether this fibrous exudate is from the bacterial cells or not. Most likely, though, it is the result of certain ferments from the tissue cells.

In the degeneration of tissue cells like that of an alveolar abscess, a microscopic examination showing the presence of erythrocytes is an indication that considerable destruction of the tissue has been going on, and that the blood vessels are more or less involved in the destructive changes. It might be well to say in this connection that such destructive changes involve more or less of the peridental membrane, rather than causing a destruction in the bony tissue. In the majority of these cases the destructive process will go on along the side of the root and make its appearance externally at the neck of the tooth. Such a condition would indicate that there was present round cell infiltration and cellular exudation, with possibly the presence of pus. The cells may be few or many in number; there may be so few, however, that they can only be found by careful microscopic examination. On the other hand they may be numerous, with a general liquefactive process and necrosis of the tissue, with the formation of a large abscess cavity containing considerable pus. In such a case the polymorphous leucocytes are usually present in great numbers, which, as a rule, is a favorable indication in the destructive changes of the tissue.

It sometimes happens that degenerative changes of the tissues surrounding the roots of teeth takes place in the manner above described, following the peridental membrane from the foci of irritation to the free margin of the gum. This destructive change that is going on may bring about toxic conditions of the cells of the periosteum, there producing a general periostitis of the tissue in that vicinity. If the destructive inflammatory changes take place in the bony structure, the outwandering loucocytes invade the haversian system and the lacunæ. If the pus formed in such tissue is of an acid character it will cause rapid destruction of the lime salts of the bone, and in a brief period there will be established a large abscess cavity which will involve considerable area of bone; and unless the leucocytes are not energetic in their bacterial destruction the bacteria will follow deeper and deeper into the haversian canals and lacunæ; the lymphatic system may become so extensively involved in carrying away living bacteria that other, and sometimes very remote, parts of the body may be the seat of a destructive suppurative process.

It has been my privilege to see a number of such abscesses result in very serious conditions. If the infectious material establishes a periostitis the area involved in inflammation and suppuration usually becomes circumscribed, and as a rule does not produce the extensive destructive changes as in the case where the bony structure is immediately involved independent of the periosteum. This reason can be accounted for perhaps because that the periosteum is rich in blood supply and the leucocytes have a better opportunity to control the bacterial invasion.

Destructive processes may be said to exist in about three forms: Acute, subacute and chronic alveolar abscesses, which are very much in accordance with the classification of inflammation, such as is involved in other tissue. The acute stage of an alveolar abscess might be said to be one which is rapid in its onset and brief in duration, and is usually the result of the successful invasion of the tissue, beyond the apical end of the root, with various forms of bacteria. There may be a number of organisms which are extremely variable in quantity and kind present. I have yet the first alveolar abscess to examine, for the bacterial findings, in which I did not find present the bacillus of pulp gangrene. As I have elsewhere stated, this bacterium is not, in the strictest sense of the word, a pathogenic germ, but that it is under certain circumstances capable of producing destructive processes in the tissue. So far as my observation goes, this bacterium does not produce an acute inflammation, but ordinarily brings about a slow degenerative process of the tissue, and if some other bacterium is present like the streptococcus or staphylococcus form it then seems to continue its principal role, which is that of liquefying dead organic material.

The staphylococcus that is usually found in the oral cavity is not ordinarily a very virulent organism. It may be said that the saliva from the individual in whom the physiological functions of the body is normal, in the majority of instances the bacteria lose a certain amount of their virulency when they are permitted to live in this fluid for any considerable length of time. If these bacteria, after living in what might be termed a normal saliva, are introduced into the apical space where there has been no destructive changes, other than that of a traumatic nature, it will very seldom happen that acute inflammation will be established of sufficient importance as to produce any very serious symptoms. As a matter of fact, the severe abscesses that follow destructive degeneration of the pulp is the result of the tissue around the roots of teeth being involved in the absorption of certain toxic material that has been formed as the result of degeneration of the pulp tissue. Not only may it sometimes happen that the destruction of the pulp by bacteria produces local toxemia of the tissue cells in the vicinity of the tooth involved in the process, but many of these toxic materials may have an elective affinity for certain tissue cells and produce certain general conditions, which may never be recognized as the result of this destructive process. But, suffice it to say, the bacteria that make their way to the apical end of the roots of teeth through the degeneration of the pulp are more destructive in their tendencies and the tissue has less resistance. Consequently an acute abscess is the result of the entrance of pathogenic germs into the tissue, the resistance of which has almost been reduced to the minimum in its restricting power.

I have isolated from one to nine different kinds of bacteria from a single abscess. In several instances I isolated four kinds, in which it was impossible to produce in an animal a single process that indicated that of the formation of pus. Such a condition could only be accounted for by growing these organisms in the same culture media and making inoculations from the culture in which the four forms had grown together, in which case the conditions proved that these organisms must be together in order that the active inflammatory and pus-producing powers could be accomplished. I hope that I shall be able at some future time to go into more detail with this peculiar biological phenomena, for such phenomena have an important bearing on the pathology and treatment of various diseased conditions, especially like those of alveolar abscesses in which we have the introduction of a number of bacteria of different species.

Out of the many varieties of bacteria, in the oral cavity, it is a question if not all of them, under certain circumstances, are not capable of producing inflammation, while on the other hand if these same bacteria were permitted to live constantly in the saliva of a perfectly normal individual, it is a question if any one of them would produce the formation of pus. But if these bacteria were to remain in the tissue for any great length of time they would become mild irritating agents, and produce certain degenerative changes in the tissue, which would not be recognized by the unaided eye as diseased conditions for perhaps months and even years.

The more closely we study the biological activities of bacteria as found in the mouths of healthy individuals and those taking part in local pathological changes in the tissue, the more nearly will it be possible to retain the roots of teeth in a healthy and useful condition. When an abscess has been established at the apical end of the root of a tooth, the question naturally arises, in what manner and to what extent can that tooth be retained as a healthy and useful member? It has been my privilege to study the bacteriological and pathological conditions of a large number of teeth, in which the treatment and root fillings had been done anywhere from several months to a number of years previous to coming under my observation. On the removal of the root-canal filling in a number of teeth, which many times consisted of various forms of gutta-percha, the oil of eucalyptus could be detected.

For a number of years, in the general practice of treating root canals in which abscesses had been formed, the chemical agents used were various preparations containing principally the volatile oil series, which, as is well known, have no special power of disinfecting and really have but little value as antiseptics. They are extremely irritating to the tissue cells and many times sufficiently stimulating to the bacterial forms of life as to produce cell proliferation in those organisms, thus producing the increased number of bacteria instead of diminishing them.

The oil of eucalyptus has very different antiseptic properties on such bacteria as are permitted to grow in the intestinal tract for some time to bacteria that have been permitted to live in alveolar abscesses and putrescent root canals the same length of time. In the latter case the organisms are but little effected with this agent, while in the case of the colon and typhoid bacillus the above-named agent is quite effectual, especially in fresh cultures directly from the intestinal tract.

What is true of the oil of eucalyptus is very largely true of all the essential oils. The aromatic series contain almost universally the terpene group which are hydrocarbons, possessing the general formula $(C_5H_8)n$. There are some twelve of these terpenes, varying somewhat in their chemical structure and their sterometrical forms. The sesquiterpenes $(C_{15}H_{24})$ form another group of the hydrocarbons. There are some that are still of a higher molecular combination than those just mentioned; the diterpenes $(C_{20}H_{32})$. Any one of this group is antiseptic only so far as they are capable of being disassociated or going into solution. Consequently these agents are little to be relied upon as antiseptics, for they do not go into solution very readily. It is therefore necessary to adopt some more efficient compounds for the treatment of alveolar abscesses.

In the use of any agent it is important that the conditions for which it is to be used, and the extent of the destruction of tissue, should be well considered. In the acute forms where an extensive inflammation and active suppuration is apparent, the first two or three treatments should be of rather a radical nature, both in the mechanical removal of all infectious material so far as possible, and the application of an agent that will destroy bacteria when brought in contact with them. There is no chemical compound, so far as known, that will accomplish this so easily and quickly as that of the phenols. They are best obtained for this purpose in the group known as cresols, especially are these indicated in the forms of acute alveolar abscesses. In abscesses that are mild and not actively pus-forming, such agents would be considered somewhat irritating and might produce over-destruction of certain tissue elements that are capable of regeneration into healthy and normal tissue without producing the condition of the tissue, whereby it would take considerable time for it to re-establish a healthy functional activity around the root of the tooth. In these mild forms of inflammation such chemical compounds as the dioxybenzolds (C_6H_4) (OH_2) are indicated. The three principal derivatives that perhaps claim first place in this group are hydroquione, pyrocatechin and resorcin. While these three agents are not specially strong antiseptics, they are but slightly irritating to the tissue, and they contain sufficient antiseptic power to destroy, or at least prevent, the proliferation of certain forms of bacteria, and especially the staphlococcus as found in the oral cavity, under the circumstances just mentioned.

Thymol (C_6H_3) $(CH_3C_3H_7)$ (OH) is also an agent that bears close resemblance to those just mentioned, but is very insoluble under ordinary circumstances. I have found that if dissolved in oil of eucalyptus it becomes a valuable agent in the treatment of certain forms of alveolar abscesses, and especially those we recognize as the mild forms of chronic blind abscesses.

In this group of agents is quaiacol carbonate, which is equal parts of quaiacol and carbolic acid. This compound is useful in the treatment of mild forms of pus-producing agents, where the tissue cells require a mild stimulation. It should be borne in mind that the agents grouped as the benzol series are classes along beside that of the phenol series and have very deleterious effect upon certain tissue cells, especially those engaged in cell proliferation and regeneration. Any one of these mentioned will, if constantly forced into a pus pocket, especially after the organisms producing the pus formation are enfeebled, destroy the embryonic cells that are producing regeneration of the tissue much more easily than will the bacteria cell. Therefore it is necessary to bear in mind, as the active inflammation gradually subsides the agents should be used in a manner so as not to disturb the regenerative processes that are going on in the tissue cells.

A point that should constantly be borne in mind is that the alleviation of the inflammatory process does not always mean that the bacterial cells have all been destroyed, for as I have fully demonstrated that many of these bacteria pass into a stage of inactivity, which is sometimes looked upon as the pre-forming stage; these are not easily affected by either the leucocytes in the tissue or the agents placed therein for disinfecting purposes. Many times after all the symptoms of disease process has passed away, there can still be found present bacteria and their spores, and if they be sealed in the state just mentioned it is impossible for them to remain there in this dormant state until some future time when the resistance of the tissue has been lost; possibly the bacteria cell has become so habituated to its environing conditions as to again renew its cellular activity and become a mild irritating agent to the tissue cells, producing a form of degeneration of the tissue. This possibly will bring about an absorption of the root of the tooth or a hypercementosis, which will sooner or later result in the less of the usefullness of the tooth, and eventually the tooth may be entirely lost.

The two conditions just mentioned is the result of some agent acting in a mild way upon the tissues, so mild as to even be incapable of producing an active inflammation, but of sufficient irritating power as to cause the tissue cells to be diverted from their physiological activity to one of a mild pathological change.

If time and space would permit I might go on and discuss many other phases of this condition, with the bacterial findings, and the effects agents have upon these various forms of micro-organisms found in these pathological conditions. But suffice it to say, bacteria vary in their action upon the tissues in the vicinity of roots of teeth and the alveolar tissue. Such tissues also vary in their reactivity to these agents, and the chemical compounds that are to be used in such cases should be selected with the greatest care, and above all things they should not be used indiscriminately in all pus pockets and all classes of inflammation.

DENTAL AMALGAM.*

BY F. J. SPARGUR, D. D. S., CLEVELAND, OHIO.

Amalgam has been in use as a dental filling material in this country something over half a century. We learn from a study of the article on plastic filling material by Burchard in the "American Text-Book of Operative Dentistry," that an amalgam composed of coin-silver and copper combined with mercury was used in this country first by a couple of charlatans. The material and the methods of those introducing it were severely condemned by the dental profession of that time. Not until some years later was an alloy of silver and tin introduced by Dr. Elisha Townsend of Philadelphia. The standing of Doctor

---

*Read before the Cleveland City Dental Society.

Townsend as a practitioner of ability served to remove in a measure the ban placed upon amalgam. But shortly after this it was again very generally condemned.

A realization on the part of prominent men, however, that gold as a filling material had its limitations and that amalgam properly handled could in a measure supply the deficiency, led to its almost universal use. Amalgam, as we have seen, made its entry into the dental cabinet under a cloud, and under a cloud it has to an extent remained to this day. I do not remember having seen, of late, a paper in any dental publication dealing with dental amalgam, its uses and abuses. Any number of articles appear and reappear concerning porcelain, bacteria, pyorrhea, the dental pulp, and other matters of interest, but the subject of amalgam is for the most part left severely alone. Who of us can remember a dental clinic where amalgam was the star attraction? I infer that the reason for this is that amalgam is a commonplace material outside of our offices, where —unfortunately, perhaps—the practical, if not the prosaic side of our profession holds the center of the stage, to the exclusion of the more ideal and scientific side which is so in evidence in the deliberations of our meetings and conventions. I contend that, as in the past, so in the future, will amalgam play a large part in the struggle to combat decay of the teeth.

We must concede, no doubt, that in some offices amalgam is slightly in evidence. The fact remains nevertheless that among the rank and file of dental practitioners the alloy and mercury retorts are more often reached for than all the other filling materials combined.

The essayist contends:

First: That amalgam, if properly and intelligently used, is a worthy aid to the conscientious operator.

Second: That a good amalgam filling is a far better tooth saver than an indifferently-made gold filling.

Third: That a filling made of cohesive gold in proximo-occlusal cavities, is not as long-lived as a good amalgam filling in the majority of cases.

Fourth: That large cavities, in which gold, tin or porcelain are contraindicated, can be filled successfully in many cases with amalgam.

Fifth: That many teeth are crowned which would be better saved by restoring with amalgam.

Sixth: That no material at the dentist's disposal is so roundly abused and so slovenly used as amalgam.

The writer desires it understood that he considers an amalgam filling "good"—as a general thing at least—*only* when it is used *over* a cement lining.

If the above contentions are correct, why does not the profession pay more attention to ways and means to bring out the best there is in this much-maligned material? The essayist has reason to believe that many men in our profession—he would like to say the majority, but fears that would be an exaggeration—give to the subject of amalgam careful and conscientious thought, and to its manipulation painstaking effort. To those who are guiltv of foisting upon their trusting and helpless patients the "*hurry-up*" amalgam monstrosities which we so often see, is this paper directed. The essayist has no thought of presenting anything new or original. He merely desires to urge the oft-repeated maxim that "Whatever is worth doing at all is worth doing well;" and to call attention to a few methods tried and found efficient.

It is essential that wherever possible dryness should be secured and maintained throughout the operation of filling a tooth with amalgam. This is usually most easily obtained by the use of the rubber. The thorough desiccation of the cavity insures a minimum of pain in excavating, an unobstructed view of the field of operation, the detection of small particles of decay, or small decalcified spots on cavity margins, and other defects that would not be so certainly detected if the cavity were wet or even moist. It must be conceded that there are operators so expert in the use of napkins that a fair condition of dryness can be maintained without the rubber, but there are few such. It will be argued, perhaps, that the time spent in adjusting the rubber—the expense perhaps—is out of proportion to the advantages. This may be so in offices where "anything goes" and where the application of the rubber posterior to the cuspids is an event. I would earnestly advise those in this class to acquire the rubber dam habit.

In the preparation of cavities for amalgam, cutting in the way of extension for prevention and the preparation of cavity margins should be as thorough and painstaking as for gold. The dentist who merely cuts out pits of decay in the sulci of molars and bicuspids instead of following the sulcus to the end, who leaves over-hanging frail walls with rough uneven margins, may pride himself on being a rapid operator—a very smooth article—and by some process of thought, more wonderful than wise, consider himself an honest man He is, however, eligible to membership in the great society of grafters. He may be a member of honorable dental organizations—for a slovenly workman may be ethical according to the code, may boast at the city, county or State meetings—prate fondly of porcelain inlays, original research, and what not. He may deceive himself, but his fellow-practitioners know him for what he is—a mighty poor dentist whose aim is the almighty dollar by the quickest route.

The writer, from experience and observation, has been led to believe that there are few instances where it is justifiable to place amalgam in a tooth cavity without a lining, preferably cement. The following method has its advantages. A thin mix of oxyphosphate of zinc cement spread on the floor of the cavity—immediately burnishing a small amount of amalgam into it, thus spreading the cement in all directions. Then clean the margins thoroughly, after which complete the filling with the remainder of the amalgam mix, which has been worked between the fingers during the preliminary work to retard crystalization. In this way, an amalgam inlay is had in effect, insuring retention, and lessened shrinkage. It is possible by this method to reduce cutting for retention, in sensitive conditions, to a minimum. Oxychlorid of zinc is also used as a cavity lining, but is at a disadvantage in that it is not sticky. It is valuable because of its germicidal properties. The too common way of mixing unknown proportions of alloy and mercury in the palm of the hand is an unscientific method of procedure. It is indicative of the "hurry-up" dentist. Definite proportions of alloy and mercury should be determined by weight—the mixing done in a mortar to insure thorough amalgamation. Excess of mercury should be expelled by means of squeezing the mass in chamois skin, or otherwise. The degree to which the expression is carried is to be determined by the nature of the filling and the time necessary to insert it The use of mortar and pestle in mixing amalgam in no wise injures the material in so far as the writer has been able to determine Alloys after Black's formula—the medium and quick-setting—it is believed produce the most satisfactory results.

If the operator will take the time and pains to polish his amalgam fillings he will be the gainer in the estimation of his patient—to say nothing of his own satisfaction as he inspects finished operations. Amalgam fillings so polished will not tarnish to any great extent in many mouths. The filling of simple occlusal cavities in bicuspids or molars, or the restoration of portions or even entire crowns, is within the reach of careful expert amalgam manipulators. The dentist who has developed that most important attribute to a successful and finished operator, "the ability to take pains," will feel no sense of shame as he contemplates a well-made, well-contoured, brightly polished amalgam restoration

ANESTHETICS USEFUL IN DENTISTRY.*

BY A. C. HEWETT, L. L. B., M. D., CHICAGO, ILLINOIS.

In considering this matter of anaesthetics so grave in importance there are three salient points of view, neither of which should be overlooked.

First:—It is diseased human life with which we have to deal.

Second:—There is an unavoidable concomitant of that life in disease, human pain, and human agony which are to be dealt with at the very beginning of our every endeavor; and that pain and agony are to be overcome by us or endured by our patients.

Third:—The choice of means to be employed to overcome that universal incident, pain physical, and what is nearly or quite as bad for our patients, an irritating, nerve depressing *dread* of the possible agony.

It is to the elucidation of these briefly stated points that I ask your attention on this occasion.

In what I shall have to say I shall avoid as far as possible the strictly scientific phase. In the pain *practicalities*, there is quite sufficient to occupy the time.

First:—Then, need I argue that it is human life only, with which we as practitioners have to deal? Its mere statement is sufficient. In acquiring our professional education the lives of a lower order have to be endangered, even sacrificed. We however have passed that preparatory stage. Practitioners are often entreated to do *all-day-operating* on a single patient; a proceeding more dangerous to health, and consequently to life, than the judicious administration of any known anaesthetic. We are often asked to extract from one to a dozen teeth without any lethal influence, a yielding to which is always fraught with danger. We are often importuned, or I have been, to extract teeth for persons in an advanced stage of cardiac disease. Absolute refusal without a stimulating analgesic should come promptly from the operator. (Ex.)—The nearest to a casuality that ever occurred to myself was in the case of a young man in perfect health, except for the depressing influence of a pericemental inflammation of the upper-maxillae caused by a carious tooth, that he asked me to extract. I warned him of the danger of the operation without an anaesthetic. "Do you think I am not man enough to have a tooth pulled without taking something," he asked contemptuously, "Pull it out!" I yielded and for hours two physicians and myself were a busy trio in efforts, finally successful, at restoration from shock of the pain. Had I given chloroform no shock would have occurred.

---

*Read at the Ransom & Randolph Clinical Exhibit, December 12-14, 1905.

Second:—Pain as an unavoidable concomitant of operative dentistry. Until the dear people become sufficiently educated, and until dentistry has advanced to the high plane of successful prophylaxis, *so long will operative dentistry have to deal with physical pain.* Pain first in an early dentition of baby life, pain in cutting the dens sophronistus, pain in practical orthodontia, agony in dragging crown and roots of teeth from their sockets, sharp and shocking in the application of the curved, sharpened searcher-point to bared, sensitive dentine and exposed pulps, (and Per Viam, the latter so easily avoided by an application of a local anaesthetic;) pain first, midway and last, we all know it, feel it, realize it, fear and regret it. Its dread begins with early consciousness and haunts us till senile unconsciousness supervenes. I need not enlarge as to my second point.

Third:—This is important. Now, *pari passu,* let us examine this step by step together, seeking the remedy for not only the pain, but an obtunder for the keen edge of the *dread* of pain and agony.

It is with great pleasure that I recognize the awakening interest in pain avoidance on the part of the rank and file of not only the dental profession, but also in the surgical and medical profession, no matter of what school. The time has passed when a dentist will extract a half dozen or more teeth without an administration of an anaesthetic. Indeed so averse are dentists to extraction that they now very generally relegate that operation to specialists, who make that their entire business. The practice is one that I very much deprecate. Every dentist should be skilful and courageous enough and fully equipped to painlessly extract every tooth his patients must lose. A possible exception might perhaps be made in the case of "impacted third molars;" with which cases oral surgeons usually deal. Because a man is sick or maimed, is no reason for putting out his life and burying or cremating him. Teeth were made to save, alive and use, either for mastication or as abutments or anchors.

I think there cannot be two opinions as to the need of dental proficiency, courage and preparedness as aforesaid. As to the armamentarium in detail, there may be differences of opinion. To make my point clear, in the effort at pain avoidance some may accept and adopt some one drug or method as ether or hypnotism, or both; others will take nitrous oxide, or ethyl chloride. But whatever method or means is chosen, some way should be found to rob the dental chair of its too well earned repute as an inquisatorial mecca.

An incident illustrative of the importance of what I urge came under my observation in my home city late in the preceding autumn. A noted surgeon of said city for whose teeth I had cared while yet in practice, came to consult me in regard to a tooth that was at the time giving him intense pain. Previous to coming to me he had been to a dentist but got no relief. On examining I found his odontodynia came from an exposed pulp. I applied a local anaesthetic of which I shall speak later, to the exposure, and to the gingivæ surrounding the tooth. Relief came soon, and he remarked, "That's easy work." I passed the pun and repled "But this is only temporary relief. To save your tooth immediate attention should be given looking to permanent repair." He assented and named Dr. T—as his choice. He asked, "Will you go with me to give an anaesthetic your way?" I replied "Yes, gladly." After I had applied the local anaesthetic till we arrived at the office of the dentist to whom he applied, it must have been one and a half hours, and the lethal effect had passed off, and the tooth had begun to pain him again. In passing I will say that the dentist to whom my friend went is celebrated for his skill and erudition; a young man comparatively but a teacher in one of the leading dental schools, and ethical till he is as firm on codes as a sole of oak turned leather on a gravel walk. On entering the office my friend said "I have brought Dr. Hewett with me to give an anaesthetic if there is to be pain. I do not like to be hurt." "O," said Dr. T—, the dentist, "You will not need an anaesthetic. I seldom require one." This with a nod to me, a flash of his cold steel gray eyes on my friend. He washed his hands elaborately and flourishingly-splashingly, and selecting a searcher from his case, a long, sharp, curved cruel thing, dipped it into a liquid (presumably antiseptic) ; literally grabbed the patient's chin with the left hand, and thrust the searcher into the patient's mouth. *Time* seemed the essence of the contract with him. My friend flashed his marine-blue eyes at me that told of resentment, but being a born gentleman he opened his mouth and kept quiet; but I saw the free lip quiver, and a pale oval spread around his mouth. My friend wanted analgesia to overcome *the dread*. Sooner than I am telling it, a convulsive spring as if a galvanic shock had been given him, told that the cruel searcher had found its mark, the bare pulp. "Did I hurt you?" icily asked Dr. T—. "*Some*," said my friend. Dr. T— cooly turned, wiped his searcher, dipped it into the antiseptic, and handed it to his assistant, and then proceeded to apply a bit of "arsenic to the pulp." covered it in, and said, "That is all today; come back day after tomorrow." "What do I owe you?" said my friend. "O, nothing today," said Dr. T— "My treatment was preliminary." "I prefer to pay" said my friend, and ice seemed gathering on the windows, and a chill was in the air. I knew my friend. I took his arm, and as we turned toward the lifts of the building I caught a glimpse of Dr. T— looking after us as though in a daze. He felt as though something had gone wrong.

Arrived on the street, I said cheerily, "Dr. T— hurt you some did he not?" "Yes, d—n him," exploded my church member friend. "You never hurt me like that, and *it was not necessary* for him to shock me so." It's the last he'll see of me, and never a dollar more shall he get from me or my friends if I can help it." "Well," I said, ethically trying to soothe him, "It's his way. He's a very busy man." "Yes, too busy, too busy for me," he replied. The arsenic in the tooth needed care. I took him to my nephew and namesake, whom I had schooled in analgesics. As a result of his differing methods he did for my friend over a hundred dollars worth in caring for that and others of his teeth. Since that time I believe my friend has turned into the pockets of my nephew over a thousand dollars, and still retains a fast friend and an enthusiastic advocate of analgesia in *dental operations.*

I could not help contrasting Dr. T—'s abrupt treatment of my friend with the great, sweet tenderness I was shown on the occasion of an amputation he performed for me of my right ring finger only a stump of which I can show you. I'll tell you of it for it will convey its lesson. Something like two years before what I have just related, in a brass foundry in which I had an interest, I (no matter how carelessly) got my finger point, above alluded to, under a drop-forge-hammer that fell with an impact of over sixty tons. My poor finger came out a pulpy, frayed stump with bone splinters protruding beside a white beautiful thread of a nerve that still clung to stump and end. It took about an hour to get from the foundry to my friend's office. I'll call him Dr. T—, as that letter is first in his patronymic. I had telephoned the doctor to have his instruments ready to amputate my finger. On arrival he looked me over, and then scrutinized my maimed member and from sheer sympathy turned face-white as snow. He soon rallied however, and as I took the operating chair he said "'Well my boy" (I am enough older than he to have begotten him) "are you going to take your own medicine?" (Meaning the anaesthetic my way) "Yes." "Well" he replied, "If the pain gets too hot for you I'll help you out, you sha'nt suffer". I wanted to hug him for his tenderness but instead said, "I'll tell you if it hurts." I leaned my right elbow on a table placed beside the operating chair, and held my hand up conveniently for him to operate, and with my left hand held the anaesthetic for inhalation, which I began, and continued till peripheral nerves were obtunded; when I said "Work away." He first pulled splinters of bone that still hung to periostium above the end, removing with forceps six to ten pieces, and poked around in the wound for more. When he laid down the forcep I said"Wait a little, please," and again inhaled the drug to a still deeper obtundure than at first, bidding him, "Cut away." He did. He trimmed frayed muscle fascia and integument into shape for a good flap, and cut a circular gash over periostium so the flesh could retract for shortening the bone. About this time peripheral nerves began to awaken, and again I inhaled while he worked. Looking up he said, "I am ready for the bone." "So am I" was my reply. Mercilessly he pushed the flesh toward the middle joint and with a bone shears, with a grinding crash which I distinctly remember, severed it high up, still holding up my maimed hand for the surgeon's convenience, and intermittingly inhaling the anaesthetic we continued to play our parts, while five stitches through the flap edges brought borders together, *and an end to the operating.*

I judge that the entire operation occupied about twenty minutes of time. In less than five minutes of the stitching I got from the chair without assistance, walked across Adams street to my home, ate a good luncheon, after which I took surface cars for "down town" two miles away, meeting a business engagement which occupied most of the afternoon. Did I feel the shock? Yes, a little either from hammers crash, subsequent pain till I reached the operating chair, and possibly a little from the anaesthetic. Neither one or the three together however, kept me from business, meals as usual, sleep, nor from business next day, or days succeeding. Throughout the operation I felt not the slightest tinge of pain. I did not lose consciousness for a moment, but held my hand up from the table for the surgeon's convenience, and during the time we had bits of conversation about my feelings and his operating. On another occasion the same surgeon, W. A. Tichenor, still in Chicago, performed an operation upon a woman. The operation was within the pelvis, and a severe one. Another surgeon had previously attempted the same operation, but the anaesthetist had so deeply anaesthetized her that operation had to be suspended in efforts at restoration; which was finally successful; but she hovered between life and death for four days and nights, and finally recovered.

On this occasion I used chloroform to full analgesia only. The operation is necessarily a painful one and in this case occupied about forty minutes. In the midst of the operation the surgeon asked of the woman the age of her youngest child. without an instant's waiting she answered giving years and months. She appeared free from pain throughout. At the end of the forty minutes the patient was restored, and within five minutes arose from the operating couch, put on her wraps, thanked surgeon and anaesthetist for success and freedom from pain, walked to the street, and to her home about a fourth of a mile away. She has since repeated the assertion that "during the second operation she was conscious all the time of what was passing, but did not suffer either pain or the dread of it."

I ask you to note the last part of that woman's testimony. *"Or the dread of it."* That phrase corresponds so exactly with my own experience that I emphasize it, and urge it upon your attention for study.

The objector may urge that possibly I was, during the amputation of the finger under the influence of auto-suggestion or hypnotism. I think such a condition might environ some subjects, it is a weird subject of which I know nothing, but conjecture much. I assure such objector, however, that I was far removed from any influence of suggestion. After the hammer fell it was fully an hour before I could get to the surgeon's office. By that time not only the traumated member, but the hand and part of the wrist was exceedingly, sorely sensitive; and to manipulate the stump was agony, *until* I had inhaled an anaesthetic; then no amount of prodding, scissoring or stitching hurt me.

Second, though possessing the power in large degree to hypnotize others no one has ever been able to make the least hypnotic impress upon myself. No, it was analgesia pure and simple, the elder brother of anaesthesia, though the younger was recognized first and christened first.

(To be continued).

LITTLE THINGS IN DENTISTRY.

BY F. H. FAGAN, D. D. S., CLEVELAND, OHIO.

Dentistry is an art which allows us not the eccentricity of taste or action enjoyed by the literary or the paint bedaubed Bohemian. In direct contrast with the unconventional, we must exercise a constant regard for the little things, which in many other walks of life would be unimportant indeed.

The public will not consider it one of the oddities of genius if we wear baggy trousers or a greasy vest, neither can we wear long hair and allow our finger nails to take on the appearance of mourning,

Personal appearance has much to do with our success. A soiled collar or even an ancient necktie will often have much to do with failure.

The finger-nails of a dentist are viewed with admiration or disgust, every day and neglect to have them well manicured has cost some men in the profession hundreds of dollars annually. The hands of every dentist should be the cleanest part of his anatomy and his person in general should be as clean as his hands. Aside from the money loss there is another reason why the proper use of soaps should be maintained at all times and that is the self satisfaction which goes with cleanliness.

When a practice does not show a proper increase, one may rest assured that the failure is due to an inattention of some kind; the cause and the cure rests with us.

Perhaps it is a questionable mouth mirror with its hidden harvest of germs from many mouths, and its magnifying surface ground until it resembles a piece of frosted glass from a bath room window, if so, discard it and relieve your mind of the fear that a scrutinizing patient will examine it closely and discover the cement which has adhered to it for a week or more.

In place of that mirror with its horde of bacteria, have a dozen or more with metal handles, in a vase where your patients can see them. Perhaps you have a lady patient in the chair who realizes the danger surrounding a germ laden instrument and after scanning your bracket table she thinks more about what she has seen than what she feels. It would be good policy and good dentistry too to have a sterilizer in front of the chair, not as an ornament but in which to boil the instruments after each operation.

An accumulation of dust about the office or dirty drinking-glass would be enough to drive some away; even the litter about the chair and the many little things which we are accustomed to pass by unnoticed, help to form unfavorable opinions in the mind of our lady patient. This same lady may be the wife of a business man who would not countenance a coatless clerk in his store and as you stand beside the chair in your shirt sleeves she is wondering what your previous training has been.

Woe be unto you if she goes away with an unfavorable opinion of you, for when she meets the first female acquaintance, one of the joys of womankind will be hers—she will talk.

If you have been out of sorts and uncommunicative, lady number two will know it, but if you have been affable particular stress will be placed on the statement that "Dr. So-and-So is a pleasant gentleman."

Above all things do not be disagreeable with your patients, remember that politeness constitutes half of your stock in trade—figuratively speaking. A kind word will be retained in the memory as long if not longer than some fillings will hold in the teeth.

Do not take your ills to the dental chair, people like to come in contact with a lively healthy man and not a sick one, if the work is arduous do not complain but disguise the fact and endeavor to appear bright and cheery, and in time you will become an optimist by habit.

Install a happy thought into the mind of your patient and you will be using high-pressure of a kind which will often allay the most sensitive of nerves and bring their flighty imagination from its soaring heights. Be not too bold nor agressive with whom you meet, be mild of manner yet firm and others will treat you with respect.

If you think that the price which you have named for a given operation is a just compensation for your time, do not say so with a hesitating manner as if you were afraid to ask for your just dues but look the man or woman in the eye and they will know if you believe what you say.

In the matter of compensation it is certainly a fact that poor work calls for meager returns and good work demands recognition. We can not prepare some cavities with care and the balance of them carelessly neither can we insert a filling in one tooth as we know it should be done and allow the others to be retained with our trust in luck and expect to become other than one of the many derelicts of dentistry.

In a word, every piece of work which passes through our hands, should be our best effort; every aim should be to meet the requirements of each case in a way satisfactory to our patients and to ourselves; then and then only can we hope to be successful, by making the most of each opportunity we make the most of ourselves.

It is true that most people want good work and are willing to pay accordingly but if you would hold a majority of your patients year after year, do not think that the word "accordingly" and a fee that is oppressive can be synonymous.

However, if the work has been properly performed and a fee has been exacted commensurate with its worth, you can be assured that your ability as a dentist will be remembered long after a reasonable price has been forgotten.

SUGGESTIONS

A SUGGESTION FOR PULP REMOVAL.

M. L. Rhein, New York.

We know that sometimes even after a pulp has been acted upon by cocain or by arsenic or a pulp has dried voluntarily, we sometimes find that the broach in entering the pulp canal tissue will tear through it instead of removing the pulp with it. When I find a pulp in that peculiar condition where disintegration is just beginning and where there is danger that the pulp tissue will be torn and not removed entirely, I find it an excellent practice to flood the canal with alcohol as a dehydrate, alternated with warm air, and keep on evaporating until I have caused a drying up of the pulp tissue to a certain extent, and then the broach in entering will take hold of it and remove it entirely. This is a very effective method of removing pulps, which otherwise would be simply torn by the broach.—*Pacific Dental Gazette.*

FILLING OF ROOT-CANALS.

Instead of using chloro-percha as a material to fill the canal, before the use of the solid gutta-percha cone, I have been in the habit of employing a material suggested by Dr. R. L. Cochrane or Burlington, Iowa, I think published in the *Dental Review* of November, 1903. It is prepared in this way, and it has proved, in my hands, one of the best things to use in a canal before the insertion of the solid gutta-percha cone. Dr. Cochrane takes one-half ounce in weight of pink baseplate gutta-percha; saturated solution of thymol in oil of eucalyptol a half ounce; dissolve the gutta-percha in chloroform, add the thymol solution and mix them thoroughly; then allow the chloroform to evaporate. This leaves a sort of paste that you can pick up with the broach and carry into the pulp chamber. When you get it in the chamber, heat slightly a root-filler and touch it to the solution and the heat will soften it and it will flow down the finest possible canal. There is no material that I have ever used that seems to fill so perfectly small tortuous canals as that solution, which can then be followed with a solid gutta-percha cone. With that kind of technique in the filling of pulp canals, the use of this method of Dr. Cochrane's, followed with a solid gutta-percha cone, as Dr. Rhein has suggested, and covering that with the oxychloride of zinc, and then inserting the permanent filling, I have had less soreness following root canal treatment, more comfort generally, and afterward almost no trouble from the most stubborn cases.—*Pacific Dental Gazette.*

REMOVING PINS FROM ROOTS.

Thos. J. McGernon.

When a case presents itself where a Logan or other pin crown has broken off, leaving the pin embedded in the root, difficulty is often experienced in removing it; so much so, that in two cases under charge of an experienced prosthetic operator, which came under my notice recently, the loss of the roots resulted. The method taught years ago was to bore alongside and around the pin with a small bur, to the great detriment and breakage of burs, until the end of the pin was reached, taking care to run the bur against the pin in order to as far as possible avoid boring sound material away, and the often occurring danger of perforation. This required abundance of care and time; but the progress could sometimes be made by boring on one side only, and then pushing the pin in that direction, thus loosening it. When an entire Logan pin, or enough to be grasped, is left projecting from the root, the Lancaster pin-pulling pliers certainly does the work with pleasurable dispatch. If, however, the pin is broken flush with, or below, the root end, about the best and speediest way is to use a S. S. W. trephine, No. 253, which will encircle the pin and cut out the cement around it, the pin acting as a central guide to prevent the trephine going to one side and damaging root. While using the trephine care is necessary to avoid breaking it by sudden side strains, or allowing debris to clog it. The latter may be avoided by removing it two or three times to get rid of the cuttings. This method should remove all pins of ordinary length; but as the ways of some dentists are past accounting for, some extraordinary long pins are met with, to the end of which the trephine (which would be much more useful if longer) will not reach. In such cases it will be necessary to, in addition, try to loosen it by shaking, supplemented by, when necessary, boring with a bur at one side as mentioned above. It is questionable, however, whether it would not be better in such a case to allow the pin to remain and equip the new crown with a stiff tube of the same bore as the trephine, instead of a pin. A crown thus fitted is strong and can be cemented very satisfactorily. Of course, also in some cases where a projecting pin is left it might be better to place a Davis or other detachable crown on it than to pull it out.—*Dental Hints.*

A GOLD INLAY.

The following method of making a gold inlay in the occlusal surface of a molar was recently demonstrated by Dr. W. O. Fillman. After placing matrix of gold roughly, he packed it full of moss-fibre gold, and, removing the mass, flowed solder over the gold. He then replaced the inlay, readapted to the margins with burnishers, and flowed on solder to proper contour. With due care investment is unnecessary.—*Northwestern Dental Journal.*

THE STEP ANCHORAGE AND ITS INDICATIONS.

J. F. Wallace.

We are seldom if ever justified in placing a filling in the approximal surface of a bicuspid or molar where the occluding tooth is in position and the occlusion is normal, without securing it by a step anchorage cut at a right angle to the pulpal wall into the occlusal fissure. If this is done, and the step is cut sufficiently broad and deep, making that portion slightly broader at the end farthest from the cavity, there will seldom be any movement of the filling in the cavity, but care must be exercised in preparing the step to make it sufficiently deep and broad to insure sufficient filling material to prevent its stretching or breaking by the force of occlusion in the course of mastication.—*Dental Era.*

BURS AND MANDRELS.

R. H. Manning.

Keep a small jar of vaseline handy in which to dip the shanks of burs and mandrels before putting them in the hand-piece. It insures easy working of the hand-piece and prevents the ingress of moisture.—*British Dental Journal.*

A HICKORY SPATULA.

D. R. Phillips.

The glaze of a glass cement slab being removed, giving a slightly roughened surface, the fine fibre of a hickory spatula permits a mill-stone grind to the mixture of powder and liquid, insuring the breaking apart and turning over and around of all cement particles, giving a more even mixture and securing a more perfect chemical union, with no doscoloration.—*Northwestern Dental Journal.*

TO ELECTRO GILD ORTHODONTIA APPLIANCES.

J. Q. Bryam, Indianapolis.

Make a solution by dissolving ammonium carbonate and potassium cyanid, one ounce of each, in one pint of rain-water. Attach the appliance to the zinc pole and a piece of pure gold to the carbon pole of any form of cell battery. Place the solution in a porcelain pan over a low flame, allowing it to boil slowly. Keep the appliance and gold in the solution from ten to fifteen minutes. The appliance will come out with a dark brown color, but after brushing it with a stiff brush filled with sodium bicarbonate, it will have a rich gold color.—*Dental Review.*

SUPPORTING A SORE TOOTH WHILE DRILLING.

T. L. Gilmer, Chicago.

Instead of supporting a tooth by ligature to prevent pain while it is being drilled, take modeling compound, soften it and make a splint for both lingual and buccual sides of the teeth to support the sore tooth while drilling. This will prevent jarring and also prevent pressure on the inflamed peridental membrane.—*Dental Review.*

THE ADHESIVE FILLING.

Joseph Head, Philadelphia.

I believe that the unprecedented rise in the popularity of inlays, even poor inlays, is largely due to the fact that the cement makes defective margins impossible. It is not my purpose to condemn the use of gold, but to show how a gold filling can be put in so that insidious decay, though it attack the edges, can go no further. The methods of filling cavities with cement and gold are as old as cement itself. Sponge gold and modern science have probably rendered them more feasible. I shall not go into general cavity preparation, but shall deal with general principles.

To put in a gold filling adhesive with zinc oxyphosphate the procedure is as follows: Prepare the cavity with flat foundations and undercuts. Moss fibre gold or any good sponge gold, and No. 30 foil or any good foil, should be annealed and prepared ready for use. Soft creamy zinc oxyphosphate should then be placed in the cavity and squeezed out by mats of moss fibre gold until the entire walls of the cavity are lined with a film of zinc oxyphosphate covered by a layer of gold. The moss fibre gold should be condensed in such a way that it will not rock after the cement has begun to set. The bottom of the cavity should be filled with a sufficient mass of gold to permit firm, hard condensation and smoothing with a finishing bur. When this has been done more gold can be added by hand or mallet to the bottom of the cavity until the filling is within about one-sixteenth of an inch of completion. Then the enamel edges are burred smooth with a finishing bur and the surface made level. The entire gold surface should now be gone over with a fine-pointed plugger to discover and condense any soft spots. These should be firmly and evenly filled, when the filling can be finished with No. 30 foil with the mallet in the ordinary way.

The method of filling with amalgam and cement has often been described. Prepare the cavity with undercuts, sterilize, and keep dry. Mix the amalgam to the consistence of thick mush. Place creamy zinc oxyphosphate in the cavity and squeeze it out as much as possible with amalgam. Then clean the edges, dry out the remaining amalgam by compressing it in a napkin with pliers, and add the dry amalgam to the soft amalgam in the cavity until the filling is of a favorable consistence for setting. Carve to shape, send the patient away; smooth and polish on the following day.

It is not claimed that failure or recurrence of decay with this method is impossible. While we are human beings, failure with every method is possible. But it is claimed that this makes adhesive gold and amalgam fillings that ninety-nine times out of a hundred cannot be undermined by decay without giving full warning. With the gold filling, the dentin and most of the enamel is protected and supported by cement, and while the final hammering may possibly powder enamel rods on the edge, yet it is most improbable, since they are supported by the cement. But even if this slight microscopic powdering does occur and microscopic decay start, when it develops sufficiently to become apparent we can repair it with a firm assurance that this defective margin does not connect with any leak by which infection may have already started to undermine the foundations of the filling.

Of course the final pieces of gold can be burnished on the enamel edges after the Herbst method, but if gold be always kept between the hammer and the enamel, with enamel rods supported by cement on the side and dentin beneath there will be little danger that fracturing will occur.—*Dental Cosmos.*

REASONS WHY CAVITIES SHOULD HAVE STRAIGHT BUCCAL AND GINGIVAL MARGINS.

J. F. Wallace.

The lingual, buccal, and gingival margins of a cavity in the approximal surface should always be extended to where they are accessible to the usual means of cleanliness. The linguo-gingival and the bucco-gingival angles are points that probably are more often neglected in the cavity preparation than any other, especially by those who are trying to practice "extension for prevention." The usual form of a cavity being circular, these angles are very often allowed to curve somewhat instead of carrying them on a parallel line with a long axis of the tooth. This leaves an area of tooth structure at these angles that is especially susceptible to decay; while if the buccal and lingual margin was made parallel with the long axis of the tooth that portion most susceptible to decay would be covered by the filling, and the danger of recurrence of decay very largely removed. —*Dental Era.*

METHOD OF TIPPPING BRIDGE TEETH.

F. S. Miller, Wausau, Wis.

Prepare the tooth by grinding as is ordinarily done and burnish pure gold backing to position on the tooth, allowing the backing to project beyond the labial or buccal surface of the facing at the occlusal end. Hold the occlusal end of the tooth, with backing in position, against a flat surface having a right-angle cornerfi, such as a drawer in the bracket table, the labial surface of the facing being held even with the upper surface of the drawer. The projecting gold can now be turned down till it rests on the upper flat surface. Burnish the gold well against the facing and contour the tip if necessary. The case is now invested and 22-carat plate is flowed over the occlusal surface and tip as heavy as desired. After the crown is soldered, grind away the gold that overlaps the edge in front, and this will produce a solid 22-carat tip. The same method can be adopted for bicuspids and molars in bridge-work. Flow 22-carat plate over the whole surface of the backing, making it heavy enough to protect the facing. Make lingual cusps, articulate, and attach with solder.—*International Dental Journal.*

WHY ROUND-FACED PLUGGERS SHOULD BE EMPLOYED.

D. M. Cattell, Nashville.

The spreading properties of gold are so well known that it seems scarcely worth while to dwell upon them, yet there are many dentists who fail to take advantage of the well-known characteristic in operative procedures. A mechanic understands the value of a convex face on one of his hammer heads when riveting a bolt or spreading a metal plate. The dentist in his laboratory knows how to take advantage of the spreading property of gold in swaging a plate around a remaining tooth, or over the heel of the process, or, if he has made a crown band too small, it is readily stretched by laying over the convex surface of a projection from the anvil and tapping with a flat-faced hammer, thereby spreading portions of the mass. The gold-beater depends upon the convexity of his hammer as he beats the gold leaf to spread it in the vellum clutch or molds from an inch square to the usual four inch square size. Indeed, the malleability of gold seems to be well understood by our profession in every department of constructive work except operative procedures at the chair. If search be made through the pluggers of the supply houses, very few will be found whose impacting points are other than flat whatever the form of the plugger end may be, and fewer still will be found, in proportion to the number kept, in the individual dental equipment; yet a mass of gold melted and run into a cylindrical form and placed in a circular cavity with parallel walls, not too deep, and just large enough to take the cylinder—allowing it to slip in and out readily—can be so "riveted" or spread in the cavity with a convex-faced plugger that it will be made to fit the cavity and hermetically seal the orifice. How much better this can be done by spreading the gold piece by piece as inserted, spreading the mass laterally, causing it to hug tightly the cavity wall from the base or seat to the surface! I feel sure that practitioners generally have not understood the ease with which moisture-tight fillings can be made by taking advantage of this characteristic of gold, and remembering that a flat-faced plugger will not spread the mass.—*Dental Cosmos.*

TO HASTEN THE SOLUTION OF GUTTA-PERCHA IN CHLOROFORM.

Chloropercha gets out of service now and then when it is much needed because of loss of chloroform through evaporation. To get it into shape again for immediate use, add the solvent and immerse the container in a dish of hot water. The chloroform begins to boil forthwith and the material is ready for immediate application.—*Dental Office and Laboratory.*

GRINDING THE TEETH TO PRODUCE ESTHETIC LINES.

H. L. Schaffner, Florence, Italy.

Good results may be obtained by grinding the teeth to restore the esthetic line of the mouth. Certain lines will give the teeth an aristocratic look, and dentists should cultivate the art of finding the correct shape for the teeth. A line slightly one way or the other will have a great effect on the general appearance.—*Dental Review.*

EDITORIAL

EDUCATE THE PRESS.

In this advanced age and with the standing the dental profession has attained, it seems strange that dentists should still be looked upon and designated as "tooth pullers," "molar extractors," etc., but this seems to be the custom whenever dental societies meet, if the headlines of our daily papers are a criterion. In the majority of the newspaper notices of a dental society we read: "Tooth pullers to meet;" "Dentists will vie with each other in extracting teeth." "Free clinics will be held which will afford an opportunity for all afflicted with aching molars to have them pulled;" and similar expressions. As though dental science and art comprised nothing but the extraction of teeth and the making of artificial plates, when in reality but comparatively few teeth are sacrificed in these days of improved methods and scientific dentistry. Extraction of teeth is one of the least frequent operations performed in denistry, and in perhaps the majority of dental offices it is almost a thing of the past, yet the press makes it appear as the chief occupation of dentists.

When there is a meeting of the medical profession one never sees displayed in headlines that, "The bone setters are to meet," or that the "Blood letters are in session." No, the members of the medical profession are recognized as well-read and successful general practitioners; accurate diagnosticians; skilful surgeons; oculists; etc. And why should not dentists receive the recognition they deserve from the public press, for they are as well qualified for their profession as the physicians for theirs, and not be dubbed in a manner fitting for the barbers of years gone by or the itinerant dentists of the last century?

Such notices are misleading to the public and tend to belittle the dentist.

These notices may, in many cases, be made in good faith. The members of the dental profession are not disposed to relate their great achievements except possibly the advertisers and that usually is how many teeth they extracted without pain. The newspaper dental ads. make extraction of teeth and plate work the most conspicious features. Then who can blame the newspaper men for being ignorant of the true status of dentistry?

Reporters and even city editors are reasonable sort of men for all they sometimes seem to be otherwise, and are willing to be instructed.

It is not necessary to go into details as to what an exact science filling operations, gold, porcelain, etc., has become, or as to the skill attained in making and adjusting of the various forms of gold and porcelain crowns and bridges, or the almost incredible results obtained by our skilled oral surgeons, and orthodontists, or other great achievements in the various branches of dentistry. All that is necessary is to ask our newspaper friends to treat us with that respect and dignity that the standing of the dental profession deserves and a different conception of the first-class dentist, by the public, will soon follow.

At the last meeting of the Northern Ohio Dental Society a "press committee" was appointed to receive the newspaper reporters, and not only furnish them with the news, or copy, but to instruct them regarding the matter for publication and its presentation. The results were most gratifying and the press was commended for its accurate reports and the absence of slurring headlines.

If a "press committee" could be appointed for every dental society meeting to have a supervision over the matter for publication and its manner of presentation in the daily press, the newspaper men would soon see dentistry as it is today and not as it was fifty years ago, and the dental profession would receive the same recognition and courteous treatment that the newspapers now accord to the medical.

◆

ARMY DENTAL LEGISLATION.

In the February number we called attention to the appeal of the committee of the National Dental association for new legislation in the army and navy. The raising of the rank of dental surgeons is much to be desired and we urged support of the measures that would bring it about. In the pamphlet received only a few extracts from the bill were presented, the circular stating that the rest was of minor detail, and yet it seems that in this are things many of the profession are not willing to endorse. One of importance is the appointment of the examiners. Dr. Ottolengui, in an editorial in March *Items of Interest*, quotes from a copy of the bill, as presented in congress:

"Section 4 of the bill provides for a board of examiners, three in number, 'two of whom shall be civilians whose qualifications are certified by the executive council of the National Dental association;' 'the third examiner shall be selected by the surgeon-general from the contract dental surgeons eligible under tne provisions of this act, to appointment to the dental corps.' "

In commenting on this phase of the bill, Dr. Ottolengui shows how it would affect the present examiners, Drs. Oliver and Marshall. He says: "Let us consider the result which seemingly is inevitable under the restrictions here placed upon the surgeon-general. He is vouchsafed the privilege of naming one member of the board from the present contract surgeons, and assuredly at least one man on that board should have some knowledge of army wants, based upon real army experience. But can the surgeon-general select whom he pleases? Not at all. He must make choice from among those 'eligible under the provisions of this act, to appointment to the dental corps.'

"We must then discover who, among the contract dental surgeons, will be eligible. This we learn by reading Sec. 2. It is manifest that this appointee by the surgeon-general must be a man whose examination may be waived, because a board of *three* examiners cannot exist until after his appointment. Provision for waiving examination is therefore included, and is couched as follows:

" 'Provided, That the professional examination may be waived in case of dental surgeons whose efficiency reports and *entrance* examinations are satisfactory to the surgeon-general.'

"This *sounds* fair enough, and it is not strange that Senator Pettus should consider that appointments, or at least one appointment, 'is subject to the surgeon-general.' Perhaps the present surgeon-General himself thinks so. But——

"At the time of the organization of the present contract corps provision was made for the appointment of three dentists, 'with reference to their fitness for assignment under directions of the surgeon-general to the special service of conducting the examinations and supervising the operations of the others.' The original appointments were Drs. Marshall, Oliver and Morgan. Now it is noteworthy that under the wording of the clause in question the surgeon-general is prevented from appointing to the board either Dr. Marshall or Dr. Oliver, the two men, who, at the great personal sacrifice, and with rare executive ability, have brought the present army dental system to a status of efficiency which not only has made it a necessity in the army, but has converted the medical department of the army from its objection to giving rank to dental surgeons.

How does the clause exclude Marshall and Oliver? Because neither of these men were required, under the act of February 2, 1901, to pass any entrance examinations, and unless their *'entrance examinations'* be satisfactory to the surgeon-general, not only can he appoint neither of these men to the board, but neither one could be appointed to captaincies until they had first passed an examination before a board, of which two members are to be chosen by the executive council of the National Dental association. Nothing beyond the above statement is needed by those familiar with dental politics, to decide whether or not the dental profession really wishes Drs. Marshall and Oliver to be subjected to an examination by a board of examiners, before they can be appointed (at reduced salaries) to captaincies in the dental corps, which this bill is to create, if passed.

"There is always the possibility that the framers of a bill do not fully comprehend the final significance of language which they use. Let us hope that such is the case here, and that those who framed this bill have not intentionally worded it so as to exclude Drs. Marshall and Oliver from receiving recognition which is justly theirs. Now that attention is called to the fact, the committee should openly declare itself. The alteration of a single word will remove his blemish from the bill. Let the word 'examination' be changed to 'qualification,' and the appointment will really be subject to the will of the surgeon-general. At present it will be entirely in the hands of the two civilian members of the board.

PECULIAR REWARD FOR SERVICE.

"Before passing this phase of the affair the profession should be informed of a pertinent fact. While the contract surgeon has no rank, Drs. Marshall and Oliver at present enjoy the pay of major. In round numbers $2,500, a munificent sum(?) compared with the income of a private practice. Even if they succeed in receiving appointments in the new corps, as captains, they would be paid only $2,000, with an additional $200 for past services. But past services, under this peculiar bill, is not to count towards promotion to majority.

"If appointed captains they must serve another ten years before, as majors, they will receive the pay that they now enjoy. Is the dental profession ready to indorse a bill which thus rewards the men who have created the army dental corps?"

Regarding the amendment to the army dental bill, Dr. N. S. Hoff, editor of *The Dental Register,* in an editorial in the March number of that publication, says:

"To meet the criticism of the editor of the *Items of Interest,* and blaze the way for both interstate and international reciprocity, we would suggest the following amendments to the present bills before congress. First, that sections 2 and 4 of the army bill be amended so that, instead of making the three present members of the contract corps, who have been charged with the examination of candidates for the army service, captains, that one of them shall be appointed with the rank of major; and secondly, that he and an officer of similar rank in the navy corps, shall constitute the government members of a national board of dental examiners, which shall be further constituted by the appointment of three civilian dentists, one from the National Dental association, one from the National Board of Dental Examiners, and one from the National Association of Dental Faculties. This commission should hold at least one session each year for the examination of graduates of standard colleges only, who have been at least two years in private and ethical practice. All graduates who shall pass this examination should receive a certificate, which shall exempt from the professional examination any who may desire to enter the army or navy service. Such a certificate may also be made the basis of reciprocity between the states of the United States, and would be of the greatest value to any dentist who might wish to obtain registration for practice in a foreign country, as it would have government sanction and would officially certify a definite standard of professional attainment. It would help us to go to foreign countries, where educational standards are made by the government, with an official standard that no country would be disposed to question. Reflexly, it would raise the standard of professional education at home with a celerity and definiteness that none of the present methods will occomplish except after a long time. It seems to us that here is a grand opportunity to put our professional relations on an official basis; and to settle for all time the question of comity in our interstate and international relations. That there is great need that something shall be done to definitely specify our recognized standard of dental qualification abroad one need only to refer to the February *Dental Cosmos,* page 230, and read the article on 'The D. D. S. Abroad,' to learn that hundreds of American practitioners of good repute are about to have all desirable permission to pursue their professional work in Germany taken from them, under the pretense that they have not earned their titles in recognizable institutions of learning. Here we have a chance to meet this opposition in a perfectly legitimate manner, and if we neglect to do so, we certainly cannot blame those who may for their own protection be constrained to discredit our educational system and our profession."

We cannot believe that such broad-minded men as those composing the committee of the National Dental association would intentionally stoop to personal spite or attempt to enact legislation that would remove from the examining board men who have proven their capabilities and who have done so much for the cause as Drs. Oliver and Marshall.

The profession wants proper recognition, and in working for this cause let it be done in a magnanimous manner and for the best interests of the whole profession. Now that attention has been called to objectionable features in the bill, it is hoped that the committee will eliminate them that the new legislation, if enacted, will be just and meet the approval of the entire profession.

SOCIETY

ALUMNI ASSOCIATION OF ST. LOUIS DENTAL COLLEGE.

The annual clinic of the St. Louis Dental college alumni will be held at the college building Monday and Tuesday, May 7th and 8th. Program to be published in next issue of this Journal. Address all communications to Dr. Geo. B. Winter, Frisco Bldg., St. Louis.

Dr. O. Hammer, *President.*
Dr. R. O. Butts, *Secretary.*

NEBRASKA STATE DENTAL SOCIETY.

The thirtieth annual meeting of the Nebraska State Dental society will be held in Omaha, May 15, 16 and 17, 1906, at the Creighton Dental college. Dr. L. P. Haskell and Dr. J. N. MacDowell, both of Chicago, will be with us, and the indications are that we will have the best meeting in the history of the society. A cordial invitation is extended to all reputable practitioners to attend. M. E. Vance, *Corresponding Secretary.*

LAKE ERIE DENTAL ASSOCIATION.

The annual meeting of the Lake Erie Dental association will be held at the Hotel Rider, Cambridge Springs, Pa., May 15, 16, 17, 1906.

Round trip excursion rates on all roads may be procured.

The committees are working hard to make this an extra fine meeting. All ethical dentists are cordially invited to attend.

V. H. McAlpin, *Secretary,*
Warren, Pa.

IOWA STATE DENTAL SOCIETY.

The forty-fourth annual meeting of this society will be held in Des Moines, May 1, 2, 3, 1906.

C. W. Bruner, *Secretary,*
Waterloo, Ia.

MISSOURI STATE DENTAL ASSOCIATION.

The forty-first annual meeting of the Missouri State Dental association will be held this year at Springfield, Mo., June 5-6-7 inclusive.

An unusually interesting program is being arranged. A number of men eminent in the profession have signified their intention of being present, and the meeting promises to be the best in the history of the association.

All ethical dentists are cordially invited to be present.

Sam T. Bassett, *Corresponding Secretary.*

SOUTHEAST KANSAS DENTAL ASSOCIATION.

The Southeast Kansas Dental association will meet in regular session in Pittsburg, Kansas, July, 9 10. A cordial invitation is extended to the profession.

W. T. Embree, *Secretary,*
Pittsburg, Kas.

A GREAT DENTAL CLINIC.

The Kansas City (Mo.) Dental society has appointed a committee to arrange for a great dental clinic to be held February 22 and 23, 1907.

The committee is represented by Dr. J. P. Root, as president, and the following chairmen: J. D. Patterson, essays; D. J. McMillen, reception; F. G. Worthley, clinics; C. L. Hungerford, smoker; T. E. Purcell, exhibits; C. L. Van Fossen, finance; M. C. Carpenter, program; J. W. Hull, publication; R. M. Siebel, arrangements; F. W. Franklin, railroad.

The chairmen of the different committees have been at work, even at this early date, and have arranged for quarters at the Midland hotel, having secured the large banquet hall for the clinics and enough other space for the exhibits, etc. Everything is being planned in a large way so as to make this greater than all former clinics.

The clinicians will be selected from among the most prominent men in their respective lines. One evening will be devoted to essays— limited to two in number—and will be given by men well known in scientific dentistry. A complimentary banquet will be given the clinicians and essayists by the local dentists.

The committeemen back of this undertaking realize its magnitude and expect to exercise the necessary energy to push it to a successful end. All ethical dentists and dental societies are requested to keep these dates in mind and co-operate in making this a great dental gathering and the greatest of all practical dental clinics.

AFTERMATH

PERSONAL AND MISCELLANY

Free Dentistry at Hospital.—A free dental infirmary has been established at St. Anthony hospital by the Odontological society of Rockford, Ill.

Albuquerque (N. M.) Dentists Organize Society.—Officers were elected as follows: Dr. W. N. Macbeth, president; Dr. L. H. Chamberlin, vice-president; Dr. L. E. Ervin, secretary.

Central Michigan Dental Society.—The following officers were elected: President, O. C. Carr, Lansing; vice-president, Dr. E. C. Hathaway, Ionia; secretary and treasurer, Dr. N. H. Moore, Lansing.

Married.—Dr. N. G. Wills of Connersville, Ind., and Miss Elsie Clark of Rushville, Ind., were married February 15. Dr. Fred Grafund and Miss Mildred A. Claus, both of Moline, Ill., were married February 14.

Bridgeport (Conn.) Dental Society.—Officers were elected as follows: President, C. W. Strang; vice-president, C. B. Thomas; secretary, W. V. Lyons; treasurer, Charles Gerrish; executive board, A. C. Jones, F. Hindsley and E. B. Griffith.

Dentist Retires from Practice.—Dr. H. C. Widup of Columbia City, Ind., of the dental firm of Widup & Widup, disposed of his interest in the business to his nephew and present partner, B. A. Widup, February 6. Dr. Widup will devote his time to his farm and other out-of-door duties.

Dentist Murders His Wife.—Dr. Henry L. Whitbeck of Buffalo, N. Y., brutally murdered his wife, March 4th, by striking her in the temple with a small hammer. She never regained consciousness and died shortly afterwards. He then secured a rifle, and, placing the muzzle to his head, blew his brains out.

Deaths.—Dr. L. W. Skidmore of Moline, Ill., died February 24 of heart trouble, aged 45 years. Dr. Joseph N. Bulger of Quincy, Mass., died February 10 of pneumonia. Dr. T. Frank O'Keefe of Syracuse,

N. Y., died February 21, aged 25 years. Dr. Tunis R. Hane of Columbus, O., died March 5 of heart disease, aged 37 years.

Dental Surgeon Transferred.—Dr. Frank Stone, who has been in the dental surgery department of the United States army, and who has been located at San Francisco for the last two years, instead of being sent back to the Philippines, where he served three years in the army of the Orient, will be transferred to San Antonio, Tex.

Central Dental Association of Northern New Jersey.—Officers were elected as follows: President, Dr. Joseph S. Vinson; vice-president; Dr. H. Parker Marshall; treasurer, Dr. Charles A. Meeker; secretary, Dr. Charles E. C. Smith, all of Newark; executive committee, Dr. Charles F. A. Hane of Jersey City; Dr. W. Moore Gould of Newark; Dr. R. C. Fowler of Harrison; Dr. S. C. G. Watkins of Montclair, and Dr. Edwin W. Harlan of Jersey City.

Is Practicing in China.—Sylvester Hill of Muscatine, Iowa, is again practicing dentistry at New Chwang, Manchuria, at which place he was residing at the outbreak of the war between China and Japan. He was practicing his profession at Port Arthur when hostilities began between Russia and Japan, at which time he crossed over to Chefoo. He was located at Tientsin at the beginning of the "boxer" troubles and has also lived at Peking.

Explained.—"This explains everything," says the man with the set jaws, looking into the glass case wherein are displayed Washington's false teeth.

"What do you mean?" asks his wife.

"Why, if a man had to make a set of teeth like those fit his mouth it would make him so mad he could go out and lick four or five British armies in a week's time just to ease his feelings."

Fish Bone Causes Toothache.—A lower molar tooth was extracted for periostitis, and, on removal a fine bristle, like bone, was found projecting from the apex of the root. It turned out to be a fish bone, and probably one of those fine bones found in whiting. This had set up inflammation, but, of course, it was impossible to diagnose the true cause of inflammation. The fish bone was in situ, and had not been disturbed in extracting the tooth. It must have passed down the pulp chamber and through the apex of the root.—Record.

Negro Woman Cuts Teeth at Age of 106.—To live to be 106 years old is extraordinary, but to cut a second set of teeth at that greatly advanced age is something almost without precedent. Indeed, it is said there are but one or two cases recorded anywhere. Mrs. Hannah Kelly of Union, S. C., enjoys the distinction of having been practically toothless for years. The teeth, which are on the lower jaw, are about a quarter of an inch long. That she has enjoyed fine health is evidenced by her robustness, for she is said to weigh about 165 pounds.—Exchange.

Toothbrush Campaign Among School Children.—A movement is on foot for a toothbrush campaign among New York city school children. As a result it may be that dental examiners will be assigned to the schools the same as medical examiners are now employed. There can be no question concerning the value of such a plan. By dental attendance upon the children there is no doubt but that the health of the pupils would be much improved. If New York inaugurates the plan with success it will not be long before many other cities throughout the country will be following the example.

Abuse of the Dental Engine.—The cutting away of good teeth. replacing with gold caps fitting the gums perfectly tight, but nothing else; crowning teeth that were better filled. And why? Simply because we own an engine and it is the easiest solution. It is hard work to make the perfect filling, but when thus treated the tooth has very many more years of service to the patient. Gentlemen, I plead for more conservatism, more of the old-fashioned way of treating teeth by filling. A false ambition has overtaken or taken hold of many; but the fact remains. Few men become great surgeons, all may be good doctors; few admirals, all can be able seamen who win battles; few fine workers in porcelain and bridge-work, but every dentist should be well grounded in the common work of his calling, doing it uncommonly well, laying a foundation that needs no rebuilding.

Old Landmark To Be Destroyed.—The old homestead of Dr. J. Asa Kennicott, at Forty-eighth street and Madison avenue, Chicago, Ill., erected in 1857, is to be sacrificed to the building boom. When Dr. Kennicott, the first dentist to practice in Chicago, built his residence in Kenwood neither Madison avenue nor Forty-eighth street had been laid out. The road which passed before the place had been mapped out by the cows which daily were driven past by farm boys living in the vicinity, and the now fashionable neighborhood was a prairie. Dr. Kennicott decided to call his 10-acre farm Kenwood, because it was then so far away from the city that it was deemed necessary to have some distinctive name. It was the original Kenwood.

Committee Named to Arrange for International Congress.—The preliminary steps for the organization of a movement for a Jamestown Dental Congress, international in character, to be held during the Jamestown exposition in 1907, were taken February 17, at a meeting held at the Atlantic hotel, Norfolk, Va.

The joint committee from the National Dental association, the southern branch of the National Dental association, and the Virginia State Dental association, appointed for the inauguration of the movement, met and perfected organization. It is proposed to make the congress one of the biggest gatherings of dentists, representing every state in this union and many foreign countries, ever held in America.

The committee named the following officers: Chairman, Dr. Burton Lee Thorpe of St. Louis; treasurer, Dr. F. W. Stiff; secretary, Dr. H. W. Campbell.

Burglaries.—Dr. Wm. M. Thompson of Red Bank, N. J., was robbed of his entire stock of gold, valued at $50, February 19th. Dr. George De Long of Allentown, Pa., whose house was robbed of jewelry and silver recently, found on coming to his office that thieves had broken into his office and taken gold filling and dental tools valued at $300. Thieves entered the office of Dr. Randall Barrett of Norfolk, Va., February 18, and secured a quantity of gold leaf. Dr. Wm. F. McKnown of Newmarket, Md., was robbed of $30 February 6th, while on his way home, by a stranger who engaged him in conversation. Thieves are operating among the dentists in La Crosse, Wis., conducting their work on a large scale. The following places are known to have been entered: Office of Dr. A. A. Severance, crowns and bridge-work taken valued at $40; office of Dr. Alfred W. Berger, gold leaf valued at $20 taken; office of Dr. P. H. Benzel, crowns and gold leaf valued at $20 taken.

Resolutions on the Death of Dr. L. W. Skidmore.—In respect to the memory of Dr. L. W. Skidmore of Moline, Ill., the Rock Island County Dental society adopted the following resolutions Feb. 27:

"Whereas, the hand of Providence has removed from our midst our honored brother in the profession, Dr. L. W. Skidmore, and

"Whereas, in his death we have lost one of our most active members, who until his death evinced a warm interest in the welfare of our association; and as a member of the various societies of the state he gave freely of his time and energy for their betterment and advancement, therefore be it

"Resolved, that we, the members of the Rock Island County Dental society, desire and do express to his family our sympathy and sorrow in their affliction, and our admiration for the professional and personal qualities of our member; he was our friend, ever ready to extend a helping hand to a brother; and

"Resolved, that these resolutions be spread upon the records of our association, a copy be sent to the family of our departed brother, and others to the dental journals for publication.

"W. V. MAGILL,
"W. G. HAY,
"H. G. TRENT,
"Committee."

How a Dentist Aided Empress Eugenie to Escape.—How the Empress Eugenie, when swept from the Tuileries by the mob of revolutionists, on September 4, 1870, escaped to England, is related with much interesting detail in "The Memoirs of Dr. Thomas W. Evans," dentist at the court of Napoleon III., shortly to be issued. Dr. Evans, returning from a drive, was astonished to find the Empress and another lady in his library, waiting to ask his assistance. It was arranged that they should go to Deauville on the coast, where the doctor's wife was staying, and, furnished with an opportunely-prepared passport for a Dr. C—— and lady patient, the party set out next day in the doctor's landau. At Deauville they were fortunate enough to find the yacht of Sir John Burgoyne, and on it they were conveyed to Southampton, although the passage was so stormy that only the Empress' determination prevented Sir John from putting back.—Dental Record.

Regulations Required for Practice in Argentina.—Graduates of American medical and dental colleges with the proper degree who wish to enter the Argentina medical or dental faculty to practice their professions in that country must present the following documents: The diploma of the college in which the student graduated. The signatures of the rector and secretary on the diploma must be authenticated by the secretary of state ratified by an Argentine consular officer there resident, and his signature in turn certified by the Argentine minister for foreign affairs. As a matter of convenience, the signatures on the diploma might be authenticated by a local state officer before being sent to the secretary of state at Washington. The diploma is then to be presented at the office of the secretary of the faculty, accompanied by a translation of the same into Spanish, made by a public translator on stamped paper. The public translator must also call at the office of the secretary and sign a document acknowledging and confirming the genuineness of his signature. When the diploma has been accepted by the faculty, a day will be fixed on which the candidate shall appear at the secretary's office, accompanied by two witnesses, who must not be relatives nor minors, and who shall declare in writing that the candidate is the real and lawful owner of the diploma presented. In addition to this the candidate must present a petition, written on stamped paper of the value of $1, asking to be inscribed in the faculty, and to be allowed to take the examinations necessary for the "re-validation" of his diploma. The examinations made by the faculty are in the Spanish language, and embrace the same groups of subjects, and are conducted in the same order and form as prescribed for the alumni of the local school. Provisions are made for re-examinations, in case of failure in the first instance. The fees for "re-validation" are: Medical diploma, $382.14, United States money; dental diploma, $148.61.

A New Factor in Dental Education.—The writer believes that the time is at hand when a new factor could profitably be introduced into dental education. This factor is, one institution sufficiently endowed to perfectly equip and maintain for a limited number of selected students, a school modeled after the working plan of our national military and naval academies.

Outline sketch for this ideal school:

Faculty—The very best men obtainable, whose entire time should be devoted to teaching and original research work. Assistant demonstrators would be considered only as adjunct to the faculty.

Course of Study—Lectures, 8 to 10 a. m. daily; laboratory methods of instruction, 10 to 12 and 1 to 5:30 and evenings under discipline. The time covered would be six days per week, 40 weeks per year, for four years.

Entrance Requirements—Competitive examination as to health, manipulative ability and literary attainments, with a high school as a minimum.

Number of Students—Number of students limited to 200, divided into classes as follows: Freshmen, 60; sophomores, 50, and the remaining 90 divided between juniors and seniors, as the desirable student material required.

Buildings—A school building to cover all instruction, and a dormitory constructed about a gymnasium, in which all students are required to reside. Both buildings in the highest degree constructed for the health, comfort and convenience of the students and faculty.

Location—Upon or near a university campus, located in a city of sufficient size to furnish abundance of clinical material and with suitable climatic conditions to favor the long term of study.

Results—Annually a class of 40 to 45 cultivated, highly-educated professional gentlemen, who would recruit the faculties and leaven the practice of dentistry.

Necessary for Realization—A philanthropist. There would be no dearth of gratuitous suggestions for minor details.—Dr. G. H. Wilson, in Dentist's Magazine.

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

CAVITY PREPARATION.

BY CLYDE DAVIS, B. S., M. D., D. D. S., LINCOLN, NEBRASKA.

Professor of Operative Dentistry, Therapeutics, and Porcelain Art, in
Lincoln Dental College; Patron College of Dentistry,
University of Nebraska.

The dental profession is a unit in the quest of an ideal filling material, one that is possessed of all the virtues we find in every filling, and at the same time having none of the main defects possessed by any now in use. This has proven a difficult problem to solve, and one which probably never will reach solution with the proposition of a single filling material, or even a fixed combination of materials, owing to the ever-varying conditions presented in the way of difference in position in the mouth, in tooth structure, and their environment. Hand in hand with this search for "the ideal" in material for filling tooth cavities, comes the strife for "the ideal" in cavity preparation.

If one possessed the filling of "the dental millennium," we would then devise an ideal cavity preparation hedged about by a set of fixed rules, which would have few exceptions to prove them. But as it is, we must use various materials singly and in liberal combinations, hiding the imperfections, and bring into play the strong properties of each that we may get as near ideal results as possible, and success attends the man who, with wise discriminating judgment, calls into service a large variety of materials.

With this great variance in materials used, it is necessary to modify our cavity preparation to suit the needs of each specific case, yet there can be laid down some rules which are fundamental: *"The cavity should be a combination of flat walls of dentine,* *coming together at angles the least bit acute, surrounded by an enamel line which is made up of the largest curves permissible."* (Fig. 1). Some tell us to bring cavity walls straight to the surface, opposing the creation of the cavo-surface, or bevel, and at the same time advocate the absence of angles in the enamel line. This is a physical impossibility, as a cavity made up of separate and distinct planes cannot be brought abruptly to the surface of a body which is a sphere or modified sphere without making acute angles, where the line angles make exit and join the external line surrounding the cavity, at *A, B,* Fig. 2.

And again, by such a procedure we lose control of our cavo-surface, which would be an ever-varying angle, from the correct to the very acute, as well as the most obtuse.

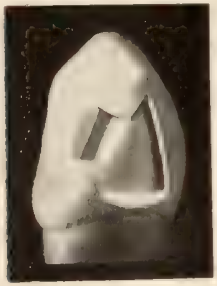


Fig. 1

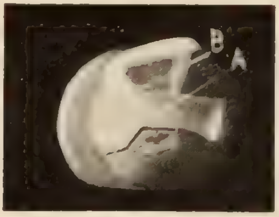


Fig. 2

The creation of the cavo-surface is of the utmost importance in cavity preparation, as it is at the cavo-surface angle that recurrent decay takes place. In considering this angle, we must figure as its base the plane of enamel through which the enamel line is passing, keeping in mind the plane established with the filling material used in complete contour restoration, and ever verging the degree of this angle as the relative edge strength between filling material used and its opposing enamel margin change, that we may have an equal resistance to stress on the part of both filling and enamel walls.

To state the matter briefly, "each filling material calls for a different cavo-surface angle." To illustrate: Fig. 3 represents a sectional view of a cavity, showing, for instance, a fixed cavo-surface angle at arrow points. This degree of obtuseness might be ideal for gold with its unequaled edge strength, but with amalgam of weaker edge strength, it certainly should be less obtuse. With porcelain it should be reduced to nearly a right angle, while with cement it may reach an acute angle. Hence another general rule may be laid down: "As the edge strength of filling material increases so increase the obtuseness of the cavo-surface angle."

The location of the cavity and the directions of the planes is somewhat deceptive as to the angle we are getting in creating our cavo-surface. The cavo-surface angles in Figs. 4 and 5 are the same, while the extent of the cavo-surface materially differs, which brings out another general rule.

The location of cavity should modify the width of the cavo-surface, leaving its angle the same at all points of the cavity.

The creation of the cavo-surface is of a necessity at the expense of the most external portion of enamel, resulting in just what we want, i. e.: "Full length enamel rods at the line of juncture of enamel and filling, backed up by shortened enamel rods, whose external ends are protected by overlaying metal."

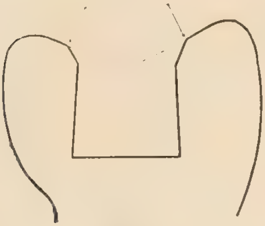


Fig. 3

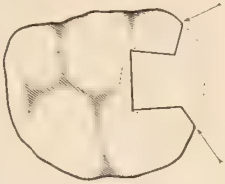


Fig. 4

There are those who oppose beveling of margins, giving as reasons weakened edge strength of filling, faulty margins due to flow of metal when amalgam is used, and its tendency to assume the sphereoidal in contracting.

The first is well taken when the beveling is excessive and results in knife edges of filling material, but at the same time it is just the reason for slight beveling of enamel margins, i. e., to prevent weakened edge strength to the weaker tooth substance. That amalgam flows, and that it contracts slightly in setting is a fault, yet if taken advantage of may be turned to a virtue, or this disadvantage neutralized by slight beveling. The announcement that amalgam tends to assume the sphereoidal form in contracting was not a startling discovery, for this law is true of every substance in existence, from a drop of water to a 30-foot railroad rail. That is why the planets are round, and the self-same law makes a sphere of the dew-drop.

It is a universal law adjunct to the law of cohesion, and any movement whatsoever of cohering atoms or molecules in any substances wherein they find a new arrangement, the result is always towards the sphere, unless cohesion is overpowered by external force. The boilermaker takes advantage of this law and double-heads a hot rivet that he may have the benefits of the shrinkage.

Applying this to a contracting amalgam filling, the retention becomes one head and the beveling another, and slight shrinkage has a tendency towards tightening rather than loosening the filling, and that "tendency to assume the sphereoidal" when slight becomes a virtue.

However, returning to those cases wherein many of us seem to be misunderstanding some of their instructors, we will name a few of the errors and request the reader to again read the rule given at the beginning of this article.

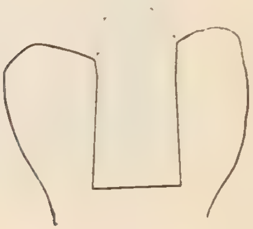


Fig. 5

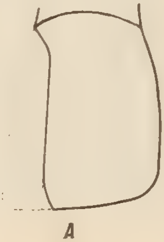


Fig. 6

In the approximal fillings of the four anterior teeth above and below, where there is angle restoration, the enamel line should curve axially just as it is about to leave the incisal edge that it may result in a slight bevel to give the tooth substance the obtuse angle. (Fig. 6).

This is not the case when using porcelain, for here we have a filling material for which we can expect only equal edge strength with supported enamel. In such an instance we should give neither the advantage and leave all surfaces at right angles with that surface, which is a safe rule when using porcelain. (*A*, Fig. 6).

The obtuseness of the cavo-surface angle should increase at the same ratio as the edge strength of filling materials increase over enamel margins; so that with cement, which is weaker than supported enamel, we give the enamel the acute angle.

"With porcelain of approximately equal strength with enamel, we leave surfaces at right angles," and so on up through the list of filling materials, the rule holds good until we reach cohesive gold, and specially when alloyed with platinum we reach filling material of maximum edge strength; hence the greatest obtuseness in the cavo-surface angle.

Again, in step cavities in the bi-cuspids and molars, the labial and buccal walls of the step are made to join the same walls of the cavity proper at an angle, thus establishing separate planes to get the dove-tail effect, a most admirable cavity preparation, but by bringing these four planes directly to the surface you carry the buccal-axial and linguo-axial line angles with them, and an angle is produced where each joins the cavo-surface angle on both the lingual and buccal wall, which stands little stress, and should be removed by the application of the rule given. (Fig. 7, corrected case, Fig. 8).

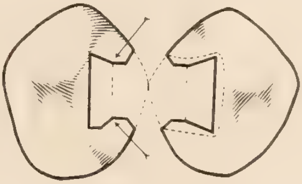


Fig. 7 Fig. 8

Again, we are told to leave all margins as the chisel leaves them, as we have read:

"It has been recently demonstrated that a closer adaptation can be made to a chiseled surface than a polished one."

This certainly is antagonistic to the laws of physics, and if proved to any investigator by his experiments, he must have gone into these experiments with a prejudiced mind. That the chisel leaves a very rough margin, composed of innumerable little planes joined together at every conceivable angle can easily be seen by looking at any cavity margin so finished under a high-power magnifying glass.

Again, that this surface can be changed to a polished margin without changing the line of enamel cleavage can be equally well demonstrated with the glass after the use of very fine disks, strips, plug finishing bur or fine stone.

The rule for enamel line finish certainly must vary with the plasticity of the material with which we fill.

For "as plasticity of filling material increases, so increases the property of adaptability; and as we approach the unyielding in filling materials, so must we smooth or polish our margins."

Hence, when enamel margins are to apose cement, polishing is a waste of time and tooth substance. But with the most unyielding materials as a sparingly trituated amalgam, over annealed cohesive gold, especially if alloyed with platinum, the polishing should reach its extreme limit. All this is in the interest of durability, to say nothing of the cosmetic effects where fillings are exposed to view.

REGULAR CONTRIBUTIONS

PORCELAIN, ITS USE AND ABUSE.*

BY D. O. M. LE CRON, D. D. S., ST. LOUIS, MO.

There are perhaps no other substances in nature so indefinite in their composition which are all mechanical deposits, which, however consolidated, have not been subjected to any indurating or metamorphic action sufficient to alter their structure.

They have all been derived from the disintegration and decomposition of rocks, chiefly ganitic or felspathic, and necessarily, therefore, contain varying proportions of substances found in such rocks as lime, potash, soda, magnesia, etc.

But whatever their composition, one essential property, add to it a certain proportion of water and "it obeys the will of the artist or artisan who can, out of this yielding mass, create new forms or perpetuate old ones."

From the written annals of Feouleang, China, it appears that the date of the origin of the art of making porcelain is unknown, but it is stated therein that the date, A. D. 442, the latter city had the honor of supplying the imperial city with porcelain. It is stated that its manufacture was commenced in China, under the dynasty of Han, sometime between B. C. 185 and A. D. 87. . In face of such facts, it may safely be assumed that the manufacture of porcelain has been carried on for about 2,000 years. Many of our historic records are found recorded on porcelain, the Phoenicians utilizing it in making imperishable records that have been handed down to us. So we find, tracing ancient and mediæval history, that the art of porcelain was practiced many years ago, and our modern manufacturers are but imitators.

---

*Read before the Ohio State Dental Society, Columbus, Dec., 1905.

The use of practical porcelain work in dentistry is due to the honor of Dr. John Allen, who in 1846 began the baking of continuous gum work. From that time on a few enthusiastic men have kept incessantly at the development of this branch of dentistry, so that today we are now able to nearly approach the "ideal in dental art." When we consider the difficulties that surrounded the pioneers in this field of work, with their crude appliances and material to work with, we can readily understand why our progress seems to have been slow.

The men of 20 years ago had none of the conveniences we have today, but they laid the foundation for a higher art in dentistry.

It is to the credit and honor of one of the noble sons of the great state of Ohio that porcelain work has attained its high rank in dental art.

From the fertile brain of Dr. L. E. Custer the electric dental furnace originated, and I concede it to be the greatest boon yet produced for the porcelain man. The dental profession is grateful to him, and his name will be handed down in history and tribute will be paid to him for generations to come.

The use of porcelain embraces four distinct classes of work: Crowns, inlays, bridges and continuous gum work, all of which present many ways of overcoming oral and dental deformities in an artistic manner. Its use is almost unlimited to those who have become skillful in this line of work. However, the requirements for success are many, and to reach the highest point of proficiency we must learn to manipulate the porcelain to retain its form; ascertain the true fusion by experimenting; calculate on the shrinkage to maintain its outline; and last, but not least, teach the eye to properly blend the colors.

This can be only accomplished by repeated experiments and a determined effort on our part to master the situation. All can learn the ceramic art if we have the perseverance and that emulation in our make-up to reach the goal of success.

As President Roosevelt says, "The law of worthy life is fundamentally the law of strife. It is only labor, painful effort, by grim energy and resolute courage, that we move on to better things. In life, as in a football game, the principle to follow is, Hit the line hard, don't foul and don't shirk, *But hit the line hard.*" So it is in porcelain work as in all other avocations of life—to attain success we must "hit the line hard." When we look back a few years and note the progress in this particular line of dentistry, we should think the profession could not evade the necessity of adopting porcelain in its various uses. It certainly is a material that comes nearer approaching the ideal than any other in competent hands. It has a greater range of application and has already supplanted the anterior gold crown and is rapidly forcing the gold filling to the rear, where it belongs.

Some men still insist that it is a fad, and many discourage its use, but I have observed they are like the man that denounced a certain book as "the most scandalous, the most mischievous, the most blackguardly book that ever escaped the hangman;" but he prejudiced his case by adding: "I have not read it; I have read what the papers say about it."

So it is with the men that condemn porcelain work; they have never used it, and form their opinion accordingly. The technique of poreclain work has been so thoroughly gone over by this time that I will not attempt to give it in detail.

The requirements for constructing a crown are similar to those for any style with a band or saddle, excepting that all roots must be cut shorter—making as much space as possible for the porcelain—to get the required strength in the finished crown.

In preparing the root to receive the band, the walls should be parallel. On the labial or buccal wall cut away sufficiently that the facings can be ground to entirely cover the band to prevent a shadow or blue line caused by the platinum showing through.

I consider crown work one of the most important parts of porcelain work. Porcelain can be applied to every case where any other crown work can, and to many cases where others cannot—no matter what the conditions are as to stress and occlusion. The framework of the crown can be reinforced with iridio-platinum on the lingual surface, almost to occlusal if the bite is short, to get the required strength for mastication. Any style of a crown one chooses to make can be made by an operator who bakes them himself, with *better* results, both mechanically and artistically. We should not consider any other form of a crown for the eight anterior teeth if exposed to view, as gold is unsightly. If a dentist is not capable of constructing a porcelain crown or at least a porcelain-faced one, he should hesitate about placing a ready-made gold crown, and consider if he may not have missed his calling. I am frank to say too many men that are practicing today are compelled to depend on the dental laboratory to make their crowns or buy the ready-made ones and palm them off on their innocent patients, on account of lack of skill and knowledge to make them. No language is strong enough to condemn such work. They are as much at fault in lowering this honorable profession as is the deplored "quack" that advertises what he will do, and does it according to the price he gets and his ability to do it.

Porcelain bridges have become a recognized factor in this branch of dental art in the hands of a few skillful operators, but I am frank to admit many failures have been experienced by the majority of operators—due, we may say, to the lack of judgment. It should be understood that we "must have bulk in porcelain to have strength;" the framework constructed on mechanical principles, and a perfect knowledge in manipulating and fusing the porcelain.

The indications for a porcelain bridge should be plenty of space for porcelain to get the required strength to withstand the force of mastication—as we are entirely dependent upon its bulk for its strength.

The framework must be rigid and constructed mechanically, to form a strong and unyielding base to receive and sustain the porcelain. We must consider in its application the condition of the teeth to serve as abutments, their number, and situation, the curve of the arch, and most important, the length of bite. If favorable conditions indicate a porcelain bridge, it can be placed with good results. The application of porcelain inlays is only limited to the ability of the operator.

I agree with Dr. F. E. Roach in that "Porcelain has a greater range of application, is more permanent, more compatible, harmonizes in color better, is more sanitary, and requires less physical exertion upon the part of both patient and operator than any other material and will force its universal adoption in time."

The first consideration is the preparation of the cavities with a view to retention. Many expert opinions on the formation of cavities have been advanced, and for detail I would refer you to the excellent papers published in the journals from the pens of Drs. Thompson, Nyman and Peck, which, I feel, cover the field and give quite a comprehensive idea of the first important step in inlay work. I am satisfied that if certain principles are carried out in forming cavities in all details, there are few places when gold is indicated for the anterior teeth that porcelain will not serve as well and better, and may add in large cavities of bicuspids and molars. As we become more skilled in preparing cavities, adapting the matrix, and the manipulation of the porcelain, our faith grows with the progress made.

The men that still hesitate about its use should look back but a few years and note its great progress. Then consider for one moment the calibre of the men that are advocating its use. We would think that when such men as Taggart, Nyman, Goslee, Thompson, Reeves, and Byram, of the middle west; Head, Capon, Ottolengui, and Rhein, of the east; Ellerbeck, Ford, and Townson, of the far west, and many of our best men in every state, that are loud in its praise and give evidence of its worth should instill in those that are yet skeptical at least a desire to make some experiments along this fascinating line of work.

The use of continuous gum is comparatively little used on account of its expense and the skill required to complete it. It certainly is the most artistic and sanitary denture, and when applied in obedience to the aesthetic requirements of individual cases, realizes the acme of prosthetic evolution. I have no hesitancy in saying, if patients are educated as to its true worth in cleanliness and appearance, they are not slow to appreciate it and readily accede the price. The use of porcelain in the above-mentioned branches has its limits only in proportion to the skill of the operator.

We may sum up the *abuse* of porcelain as follows:

First—Its false representation by unscrupulous practitioners that they do porcelain work and set ready-made crowns and insert cement fillings and pass them off for porcelain.

Second—Many beginners get a smattering idea of the work through the manufacturing clinician, and enthused by their representation that porcelain can be placed anywhere and under all conditions, they instill in them the notion that all the requirements necessary are to have the furnace and material and go to work on patients at once. No thought is given to the knowledge of cavity preparation, forming the matrix, the manipulation and fusing of the porcelain, but they are led to believe that their reward will be a crowning success. We all are familiar with the results—outfits discarded, practitioners and patients condemning the use of porcelain. They do not see the necessity of taking time (or "waste of time," as many look at it) to study the technique of the important parts and familiarize themselves with all the minor details and gradually work up to that proficiency that only can be obtained by hard work and experience.

Third—Etching and setting the inlays. We can attribute some abuse to the etching with hydrofluoric acid. Not that it does not perform its intended functions, but the manner in which it is applied and removed. I venture to say that three-fourths of the practitioners merely dip or drench it with a little water. If its penetrating force is considered for a moment, we should realize that merely drenching in water does not remove it. Note the effect of an inlay etched and rinsed as above stated—say 24 hours afterward. It will be noticed a thin film of porcelain can be brushed off; from this you can form your own conclusions. To remove the hydrofluoric acid we must rinse it thoroughly and then immerse in clean water and boil it for a few moments.

It is not necessary to dwell on the cement problem, as it has been thoroughly covered by very eminent writers. Suffice it to say that much care should be exercised in its manipulation, etc.

Fourth—The fusion of porcelain. This is a very important factor, and the most abused in porcelain work.

Two and a half years ago I prepared a paper on the fusion, crushing strength and shrinkage of the various porcelain bodies on the market, and gave the results obtained by the three years' experiments. Since the above, my son, Dr. Robert LeCron, and I made further investigations along the same line and found the results corresponded accurately with my former experiments. In our opinion, the fusion of porcelain is of supreme importance to be considered and is the greatest factor to be dealt with in the final results. Our experiments convince us that a more uniform and greater crushing strength is produced when fused at their normal fusion and the exact colors are reproduced as intended.

Temperatures can be judged by the color of the furnace, and fusion of porcelain may be approximately ascertained by an experienced eye within 50° to 200° Fahrenheit. Much depends on the degree of illumination under which the observation is made; also the susceptibility of the eye of the observer to light.

After we determined the fusing points and noted the crushing strength at the various fusing points, we considered its serious consequences and endeavored to overcome them. A series of experiments were made with pure gold and platinum combined in definite proportions until pellets of a given size were obtained, which liquified at the respective temperatures required for the fusion of the different porcelain bodies. With this metal in proper proportion and a soapstone crucible so constructed, we have a pyrometer with which we are able to properly fuse any porcelain, no matter how the current varies or how irregular the heat. If this method is carried out in all of its details it furnishes the most simple and inexpensive means of obtaining correct results.

We found, with a mixture of pure gold and platinum for every five per cent. more of platinum, the temperature is raised about 105° Fahrenheit.

The determination, however, became uncertain with more than 25% of platinum, as it requires a heat above 2,500° Fahrenheit to fuse the pellet. The temperature corresponding to the melting point of an alloy, say of 85 per cent. of pure gold and 15 per cent. of platinum, would represent a degree of heat of 2330 Fahrenheit.

On account of the durability of the alloys, this method of measuring temperatures is not expensive, and, I assure you, will meet our requirements.

Let me emphasize this fact—that success in porcelain work depends largely on perfect fusion.

To Dr. Custer we are indebted for the first improvement to overcome this abuse—the arc-light attachment—which has been quite an aid in fusion; but we must accustom our eyes to the glare, which is objectionable to many.

The necessity of true fusion has prompted a number of men the last few years to devise some method to calculate the degrees of heat to know with exactness when porcelain is fused. It was this fact, I venture to say, that instilled in that electrical genius of your great state, Dr. Price, the idea of producing the pyrometer attachment to the furnace. An insrument very delicate, but if handled with care, will measure most accurately the degrees of heat and give us satisfactory results. Dr. Roach of Chicago has recently brought out a very clever device in an automatic furnace. The heat is turned off automatically when the porcelain is fused. With the great advantages of the above methods, we have no excuse for the abuse of porcelain in regard to its fusion, and if judgment is exercised success must follow.

In conclusion, I would advise all those that have not taken up this work to go at it and get it by practical experience. We may clear the way and aid you by telling and writing, but you must do some experimenting yourself if you wish to master it and reach the goal of success.

This saying of Thomas Hood I think quite appropriate in closing:

> "Success, my boy, is the aim of all,
>   But to live that to the full,
> You want to get there through the door marked 'Push,'
>   And not through the door marked 'Pull.' "

DISSCUSSION.

Dr. L. E. Custer, Dayton, Ohio: The paper of Dr. LeCron is what we would expect from one who has made porcelain work a study. As long as I have known of Dr. LeCron he has been a student in porcelain, and with others has been instrumental in the development of porcelain art in dentistry, and to him we are today indebted for this excellent paper.

The paper, after a brief history of porcelain, treats the subject under the four heads: crowns, inlays, bridges and continuous gum. He truly says, "The requirements for success are many." Like in cataphoresis, there are so many details to be followed, any one of which being omitted the desired result is not attained, that one must pursue porcelain work with the utmost care and study. Cleanliness, as in no other part of dentistry is essential to success; patience in the condensation and moulding of the powder before baking; the proper heat in baking, not only for strength but for the development of the correct shade. No field is so fascinating as the working of porcelain and no results, when good are as pleasing, and no results, when bad, are as disappointing. The doctor maintains the position that all other dentists should, that porcelain crowns should take the place of all gold crowns in any part of the mouth that can be seen. In this connection I would call your attention to the perfection of the so-called "Jacket" crown, whereby the necessity of the complete removal of all the natural crown is avoided and the pulp thereby saved in many cases. These will be demonstrated by Drs. Spaulding of Detroit and Jenkins of Ironton. The time is past when any self-respecting dentist will use a gold crown that is not the support of a bridge in a visible position. A gold crown on an anterior tooth in this civilization is a mark of lower heathenism than the savage who wears a ring in his nose.

While at the present time and stage of the porcelain inlay filling its place is in the conspicuous cavities, yet the gold and platinum filling must for some time stand guard at the corner and all places where porcelain when subjected to strain cannot be used in bulk. In my own practice I have also used it with more satisfaction than any other material for the saving of the shells of third molars the buccal half of which is decayed so far under the gum that a filling or crown cannot be employed. It is not a difficult matter to force a stiff impression material into these cavities, forcing the gum from the cavity and at the same time securing a clean-cut outline of the margin and constructing an inlay for this in the laboratory. A filling made by this method, aside from its aesthetic appearance, is more certain of a perfect margin under the gums than any other method of filling.

The employment of porcelain in bridge-work was in many cases a disappointment to the operator. This was not from any fault of the porcelain *per se*, but from the failure to observe the physical properties of porcelain. As was pointed out in the paper, porcelain should not be employed here unless it can be used in bulk. Thin veneers will flake off and all masticating surfaces must present a body of material without the metal framework coming too near the surface. In all porcelain bridgework a framework of platino iridium of platinum which has been re-melted in the carbon arc light should be constructed strong enough in itself to withstand the force of mastication; the porcelain added thereafter is only for aesthetic and sanitary purposes. Porcelain is especially indicated where there has been considerable absorption of the process and long teeth are necessary. In these cases a platinum ribbon from one-eighth to three-sixteenths of an inch wide should be burnished to the crest of the alveolar ridge, which will give the proper form to the porcelain when completed. A platinum surface of this kind in contact with the mucous membrane is more acceptable than any other material. Porcelain bridges when finished should present a smooth, well-fused surface, lingually, the interstices between the teeth well filled both lingually and buccally. A bridge of this kind when employed in cases where there has been much loss of the process is to my mind the ideal operation. A well-fused porcelain surface is much more hygienic than any metallic surface, however smooth it may be.

Referring to the use of continuous gums, I often feel that the dental profession has never rendered that honor and obligation to Drs. Hunter and Allen, who perfected the most enduring and creditable monument in dental prosthesis. In this day of electric furnaces, when the fusing formerly wrought with so many hardships and disappointments has been reduced to an accurate procedure, it would seem that continuous gum should take its deserved place in dentistry, and it is as much the duty of the prosthetic dentist to so place it as is now being pursued by the inlay exponents in operative dentistry.

Dr. W. A. Price: I regret that Dr. LeCron did not give us more in detail, his technique. Many have taken up this porcelain art more for the sake of being considered up to date than through a laudable desire to study to excel. The sign which the quacks are hanging out, in Chicago, "Come and get your teeth veneered," is their greatest stimulant. Long-continued effort and practice is necessary for success, in this line of work. We see much of this work which is bad, abominable, in color and fit. I estimate my present ability in these respects as 90 per cent. better than it was a few years ago. No living man has the ability to tell, from looking at a shade-guide, exactly what proportion of different colors should be used to produce a translucent effect in the finished inlay. The only way to arrive at this is to make trial bakes, by which to approximate by degrees the result required. Bake that at the same time the first mix is put into the matrix. If you find you need a little more brown or yellow, make another button, and still another, and another, until perfection is reached.

Of course, it is necessary to learn the exact fusing-point of your mix, and then always use that degree of heat. My experience is that alloys used as a pyrometer are not reliable. There will be much variation in the result, on account of oxidation on the surface of any metal so used, rendering the result uncertain.

In selecting shades always lean rather to the dark side than to the light. If you find you have too light a shade in the burned mix, add a little of the darker powder, raise your temperature, say 40 degrees, burn again, and you will find you have it about right.

Another thing: this wholesale crowning of molar teeth is to be deplored. No kind of a banded crown is as good for the preservation of the tooth as a perfect gold filling. There are innumerable cases presenting in our offices every day where a good amalgam filling would have been better than the poorly-fitted crowns we see. Within the next 10 years I predict we will all of us come to realize that healthy conditions as environments for the teeth are as important as healthy conditions within the teeth. If it is necessary to remove a pulp from a tooth, do not do anything to irritate the peridental membrane.

We are entering on an era of tooth conservation which is to mark a climax of excellence we have never before attained. (Applause).

Dr. Hoff: Is the raising of the temperature of the furnace detrimental to the quality of the inlay?

Dr. Price: If the known fusing point is, say 2080 degrees, and you exceed that point by 50 degrees, the crushing strength of the inlay will be reduced 25 per cent.; if 100 degrees, 25 to 60 per cent.

Dr. ——: It seems to me you would burn out the lower shade in trying to get the higher shade.

Dr. Price: I do not practice building up shades in layers. Do not think there is anything whatever in it.

Dr. LeCron (answering Dr. Ebersole's question as to what porcelains he uses): I, like Dr. Price, use all the porcelains on the market. I am now using White's and Brewster's. I find no objection to any of them. They are all strong.

Dr. Wasser: Is the crushing strength higher, the higher the fusing?

Dr. Le Cron: No, sir. I will say, I think the platinum matrix can be used successfully, if properly annealed.

Dr. Wasser: I find often that an inlay will appear just right in shade, from a sideview, and too light or dark from the opposite side. Can that be remedied?

Dr. LeCron: I do not think that can be overcome.

Dr Ruggles: I never got satisfactory results from using Brewster's cavity-lining.

Dr. LeCron: White cement under the inlay will not always give the shade we require.

Dr Siddall: What has been your experience with decay around inlays?

Dr. LeCron: After 12 years' experience I have never seen a case of decay around a porcelain inlay.

Dr. ———: Have you abandoned extension for prevention? I take issue with the opinion that it is not necessary.

Dr. LeCron: I will say, I do not think a badly-fitted inlay would give as poor results as a gold filling.

Dr. ———: Have you observed that the etching of the inlay changes its shade? Do you undercut the inlay, as well as the cavity for retention?

Dr. LeCron: If you get a proper adaptation of the inlay, no undercutting is needed. I rely wholly on the etching of inlay. It should be boiled, to get rid of the last trace of fluoric acid.

Dr. W. T. Jackman, Cleveland, O.: I brush the surface of the inlay thoroughly with a saturated solution of soda in water. My experience has been that inlays in molars and bicuspids are harder to fit than elsewhere.

* * *

BETEL-NUT CHEWING.

BY S. D. BOAK, M. D., D. D. S., DENTAL SURGEON, U. S. ARMY.

This habit is most prevalent among the Philippinos and Moros of the Sulu Archipelago and British Borneo; and is not, as one might be led to believe, a chewing of betel-nut, but it is a masticatory of lime buyo and betel-nut, and called by the Philippinos, bayo, though this name, as far as can be learned, is not of native origin, whilst, on the other hand, the Tagalos (fiercest of the Philippino tribes) call it hitsu, which seems to be of native origin.

Lime is obtained from slacked deep-water oyster shells.

Buyo, of which the leaves alone are used either in betel-nut chewing or for medicinal purposes, comes from the piperaceae, or piper family, a climbing plant with yellow flowers and scandent stem, leaves cleft at the base, dark-green in color and cultivated best in sandy soil. The best plants grow around Pasay near Manila, and Banang in Batangas province, so the natives say, and are worth more than those found elsewhere.

The medicinal properties are aromatic and stimulant.

Buyo is a Viscayan word for piper betel, although the Tagalos call it "itmo," and the Spanish Philippino, "hojas de buyo."

Betel-nut or bonga, as it is commonly called among the natives, is a seed of the betel-nut palm, a species of the Palmar family.

Its height is less than the cocoanut palm, and similar in appearance, of a slender stem or trunk surrounded by many circles. Flowers spring in bunches of long, thread-like spikes from the trunk directly beneath the crown of leaves at the top of the tree. Each spike bears many stranute and few pistillate flowers, fruit about the size of our English walnut and the husk tow-like or filamentose, the kernel pinkish or light-red, with faint, whitish streaks through it, and grows everywhere throughout the islands.

Its medicinal properties are astringent and a tonic; when carbonized and powdered, the fruit is used as a dentifrice in many localities.

Buyo, or the prepared betel-nut for chewing, as offered for sale by every tieude (store) throughout the islands, is prepared by spreading the lime in the form of a paste on the buyo leaf, which is then folded upon itself to enclose the lime, which is then wrapped around a slice of the betel-nut or bonga, the leaf acting as an investment for the bonga.

The use of this masticatory is most common throughout the Orient, ; in fact, so common that it is hard to find a man or woman who does not use it.

The saliva is red and of a strong odor; the redness is due to the mixing of the lime and pigment of bonga, which gives a blood-red or brick-red color to the saliva, which is expectorated in mouthfuls in the street or other public places.

To the uninitiated, or Americano, it appears as if each and every one of them are trying to relieve a pthisical condition of the lungs. Unless the mouth be carefully cleaned after using, which is seldom done, the teeth and salivary deposits around the teeth become stained a reddish hue, as if they had been lacquered.

The breath assumes a detestable odor. When used in small quantities the combined medicinal effects of this masticatory seems to act as a preservative of the teeth.

My experience, when trying it as an experiment was a most disagreeable combination of symptoms, constriction of the oesophagus, fullness in the throat, head and face, a sense of heat, and later mucous membrane of mouth became red and congested, dizziness, pericardial distress, and nausea.

The natives, who are habitual chewers, tell me that they use it to preserve the teeth, as a stomach tonic and a general stimulant, which is produced through reflex action of the fifth nerve, just as on brain centres.

The natives of Mexico and South America use the leaves of the erythroxylon plant, subsisting on it alone for several days. Especially is this true of the Moros when traveling, and when one sees the small amount of food they subsist on, it must be that they gain some sustaining power from the use of this masticatory.

The natives especially use this when traveling, and among the Moros you never see a man or woman who does not have his or her betel box stuck in their belts.

Its action on the teeth is about the same as tobacco, as far as preservative power goes, staining the dentine a dark-red and rendering it, as far as my personal experience goes, practically immune to pain of excavators and rotating burs to immediate layer of dentine over pulp.

I have examined about 100 Philippinos and Moros who used it in different quantities, from the minimum to the maximum.

Five cases of Philippinos, three men, two women, age between 30 and 40, who used it to excess, showed the teeth ground, as a tobacco-chewer's would be, and a hardening of the stained dentine, which was not in the least sensitive to thermal changes or cutting of a bur. There were no signs of pyorrhoea alveolaris; gums tumefied, many teeth loose, with a decided recession of gums, but no pus around gingival margins, this condition being brought about by the astringent action of the bonga.

In 10 other Philippinos, who were examined, ranging in age from 18 to 30 years, who were moderate users, I found the gums in fairly good condition, but very anaemic.

About 60 cavities were found, ranging in size from the size of a pin-point to one including entire morsal and occlusal surfaces.

In excavating a few of the largest ones I found dentine stained clear to pulp chamber, and no pain incident thereto, until, just over pulp, patient stated he had had no pain.

The Philippinos, from what I can find out, who use the masticatory in moderation have little trouble with their teeth, and those that clean them afer chewing have beautiful teeth.

In the excessive use, the harmful effect seems to be the gradual recession of the gums with the consequent looseness and loss of the teeth.

The Moros all use it to excess, especially the women, who, as soon as they become of a marriageable age, i. e., 10 to 12 years, blacken and file their teeth, which is a mark of great beauty. The blackening is brought about by adding to the bonga a liquid prepared by putting iron filings in a cocoanut which is nearly ripe; the cap is cut off and the iron filings poured into the cocoanut; then the milk is allowed to act on the filings for about two weeks, which produces an oxide of iron; this is then poured into a pan and allowed to evaporate until the mixture becomes the consistency of molasses.

The boys, and especially the girls, then have their teeth, six anterior, superior and inferior, filed concavely with a rat-tail file (which is usually secured from some Chino store), or a rough stone, until all the enamel is eliminated; then this liquid is either applied to the exposed dentine with a stick, or it is mxed with the lime on the buyo leaf and chewed until the teeth take on a black, encrusted coat of oxide of iron.

The Moros seem to be particularly immune to dental caries and its complications.

While I was stationed at Zamboanga I offered my services to Datto Mundi, free gratis, if he would send me any of his Moros who were suffering from dental disease; in his village there were about 1,200, and in my nine months' stay there only had five cases sent to me—one dento-alveolar abscess of a right superior first molar, two cases of acute pulpitis, due to exposed nerves, both inferior right first molars, and the two others were men who wanted large gold fillings in their superior central incisors.

In the case of one of these men, in preparing cavity in right central, I drilled into the pulp chamber and found the nerve mummified, so I opened the left central and found the same condition existing, due no doubt to the filing and subsequent action of the bonga and iron on the exposed dentine.

These two teeth were the only ones I was ever able to observe, as the Moros will not let an unbeliever touch them; even in the case of child birth, they will not call in an American or Spanish doctor, no matter how serious the case.

I am told women go into their hut or in the jungle and exclude all males until the child is born, the only attendant being some old woman, and in some cases none at all.

The Moros as a rule, as far as personal observation at 10 to 15 feet distance, seem to have very good teeth, but with the thick crustation of black it would be hard to state positively their condition; the ones examined had small cavities, but they were nearly filled with the black deposit, which acts as a filling material, and limits the extent of caries, no doubt.

Betel-nut chewing no doubt has a decided preservative effect upon the teeth, as the natives eat little in way of meats, principal diet being fruits, fish and rice, and it would seem that their teeth would have a great tendency towards decay, as the teeth have very little work in the way of masticating hard substances outside of the betel-nut; therefore it seems the logical thing to attribute their good teeth to the preservative effects of the betel-chewing.

* * *

"THE TEETH AS ESSENTIALS OR NON-ESSENTIALS TO CIVILIZED MAN."*

BY C. M. WRIGHT, M. D., D. D. S., CINCINNATI, OHIO.

"Essentials," in ordinary language, means things that are highly important, or indispensable to the best interests or condition of an individual, a genus or a race. From the fact that our life-work as dentists is to preserve the natural teeth of civilized man, or to restore their loss by ingenious substitutes, we afford the best evidence of our sincere belief as a profession, that the teeth are essential to man at this time.

Medical specialists have been accused of overrating the importance of the tissues and organs which are included in their narrow special fields. But do they? Have they not rather, by the patient attention which they bring, each to his own section of the organism, so illuminated and magnified the particular part that the special organ has been placed in the proper light as to its importance in the general economy? I believe they have, and that specialism, instead of tending to narrowness, has had the broadening effect of making the correlation of all parts of the organism much more definite. It has also shown the links to be complete in the chain connecting all the organic sciences, and we now recognize biology, chemistry, physiology and psychology as interdependent. The specialist has helped to this broad conclusion and recognizes its truth.

The essential quality of the teeth of civilized man, in the functions of mastication and insalivation of his foodstuffs and the relation of these functions to general nutrition, has lately occupied the attention of scientists who are in no way connected with the practice of dentistry.

The experiments of these men have been published and have indeed made a sensation in the medical world, and in the popular mind. I need only refer to a few of them in this paper.

Mr. Horace Fletcher, a layman, advocates in a most convincing and enthusiastic manner the benefits in various ways of an excessive and prolonged mastication of every mouthful of food He has explained this in his book with the queer title, viz.: "The A, B & Z of Nutrition."

---

*Read before the Ohio State Dental Society, Columbus, Dec., 1905.

Professor Chittenden of the Scheffield Scientific School of Yale became interested in Mr. Fletcher's work and carried out valuable experiments in the line of "Physiological Economy in Nutrition."

Dr. Cannon, assistant professor of physiology in the Harvard Medical college, has also made a series of interesting and valuable experiments which tend toward the establishment of a higher value to mastication and the consequent insalivation of foodstuffs, in relation to digestion. He mixed sub-nitrate of bismuth with the food of cats, and watched the bolus with the X-ray in its onward movement to the stomach and duodenum. His conclusions show that ptyalin digestion may continue in the cardiac part of the stomach for an hour or more, before the acid gastric juice interferes. He shows also that the cardiac part of the stomach is more like a reservoir, or pouch, and without the active peristalsis of the pyloric end of this organ. He emphasizes the fact that ulcerations of the stomach occur from the rubbing and scratching of rough, *unchewed* stuffs in this part. Also *that this persistent irritation from the unchewed particles is a potent factor in the etiology of cancer of the pyloric.* These experiments and results alone would be sufficient to establish the fact that teeth are essential to civilized man.

I need not refer to other distinguished physiologists like Sir Michael Foster, who have been deeply interested in these experiments and who have today a higher regard for the function of the teeth than ever before. Indeed the physiological importance of mastication—and this means, of course, the comminuting and grinding of foodstuffs by the teeth in the mouth, is rapidly becoming a popular notion of the day. Popular science monthlies, newspaper editorials and questions by the interviewers appeal to the public and are attracting the attention of every reader. As I write this a special dispatch to *The Cincinnati Enquirer* from New York, November 12, lies before me, in these words:

"Mark Twain has found a simple cure for dyspepsia!

"Samuel Clemens, better known as 'Mark Twain,' in speaking of indigestion today, said:

" 'For 30 years I have suffered from that most annoying of ailments. Six months ago I began to try a new cure, which is to thoroughly masticate one's food and saturate it with saliva. Within the last two weeks I have begun to realize the full benefits of this simple preventive.' "

Again, in the New York Sun of the same date, a column editorial appears entitled "Osler on Teeth." The subject of the editorial was an address by Dr. Osler to the students of the Royal Dental hospital of London, on the occasion of the distribution of the prizes for the year. Dr. Osler said: "The traditions of dental art and science in England were distinctly scientific."

Next, Dr. Osler pointed out the threefold relationship existing between the dental practitioner and his patients. The function of the dentists was first to relieve suffering; secondly, to *increase the digestive capacity of his patients*, and thirdly, to preserve the beauty of the human countenance. Of these Dr. Osler regards the *increase of the capacity to digest food* as the most important. This end is to be attained by promoting mastication until the food is divided as finely as possible before it enters the stomach. Classifying the public into two great groups, the Bolters and the Chewers, Dr. Osler says it should be the aim of the dental practitioner to convert the enormous percentage of bolters into chewers."

I have quoted these few words from the lengthy editorial to show how people are getting instruction in regard to the essential quality of the teeth from many sources, outside of those which originate in the minds of the practitioner of our specialty.

I could leave this paper at this point if it were not for an idea that has obtruded itself upon me frequently, which I believe is generally neglected by us in our studies of the evolution of the face, jaws and teeth of man. We are familiar with the work of Talbot and other scientists, who, by series of pictures, show the progressive changes in the facial angles and in the relationships between the developing brains and the jaws, from the lower to the higher modern types. We are also familiar with the pseudo-scientific notion that the future man will be toothless; and with the aphorism, "the more the brains, the fewer the teeth." But does it occur to us with the same force that the face, jaws and teeth of civilized man are not the only structures associated with the digestion of cooked foods which have been and are being modified by evolution? As marked differences can be found in the softer and less conspicuous tissues of the alimentary canal, such as the lining epithelia, the glandular capacity, and the structural conditions of the tube, as can be seen in the more prominent osseous tissues of the jaw, face and skull. The vermiform appendix, the lower bowel, the stomach, and I should say, the *enzymes* of civilized man are different from those of prehistoric man. The functions of all have been modified and are under process of structural and functional modification to bring them into harmony with present needs. As the teeth of civilized man are not adapted for the prehension and tearing, and grinding of raw flesh and grain, neither are the mucous membranes and glandular juices adapted for digesting this raw and coarse food. Civilized man requires fire for the preparation of foodstuffs, and knives and forks for the reduction of food for his dainty habits of feeding. Chemistry may afford predigested stuffs in tablets, powders and liquids, and these may be useful for the civilized man who has been crippled by the loss of teeth or of the stomach or of any other part of the digestive apparatus. Today, according to so good an authority as President Eliot of Harvard, the first requisite of a civilized man is that he shall be a clean, vigorous animal. The second is, that he shall possess a trained intellect. The clean, vigorous animal needs teeth.

I have confined my remarks to the physiological necessity of teeth. Another paper could easily be occupied with the essential function of the teeth in their relation to speech and voice—how many an actor and preacher, and orator and singer has passed into the seventh period of the Shakesperean ages of man, simply because he is *sans* teeth. This the accomplished dentist can overcome by his art. The Osler limit of the period of usefulness of man is steadily being extended many years by the skilful dentists of this century.

In closing, allow me to say that no medical specialty has a brighter future of dignity for itself, and usefulness to civilized men, than dentistry. In this connection I will quote from the remarks of Dr. Osler's speech in reply to a vote of thanks for his address to the students.

"I appreciate the importance of the profession of dentistry in connection with the general hygiene of the nation, and I have been interested in it always from the scientific and practical standpoint. It is one of the few great specialties which really appeals to me on both sides, the eminently scientific and the technical side, which has, after all, progressed much further and much higher than any single special department in medicine."

DISCUSSION.

Dr. F. A. Hunter, Cincinnati, O.: Once upon a time (I believe that is the beginning of all fairy tales) there was a paper read before this society 12 minutes in length, and upon the conclusion thereof the gentleman appointed to open the discussion got on end and talked for three quarters of an hour; then the society adjourned, presumably to take something. I suppose having this incident in mind was the cause of the chairman of the executive committee requesting me to write out my remarks, so I comply with the request.

Dr. Wright has given us an excellent paper—he always does.

Dr. Fletcher has written on the same subject, and I am sorry to say that they both come from Cincinnati.

Dr. Fletcher, in his paper on this subject read before the American Medical association, takes the opposite view from Dr. Wright. He contradicts himself once or twice, but that is of small moment in a scientific paper.

The subject is purely a speculative one, and on the same plane as the germ theory, and porcelain inlays. There is absolutely no practical or tangible evidence that the human teeth were ever different from what we see today; the evidence of even pre-historic times show the same number, the same shape, the same arrangement, and the same articulation If, in the five thousand years that man has been supposed to exist, there has been no change, why should we suppose, *or care,* what takes place in the next five thousand.

Because we sometimes see a lateral incisor or a third molar missing, is that evidence of the elimination of those teeth? We sometimes see other freaks out of the mouth as well as in—the five-legged calf or the red-headed man.

But is that evidence?

But suppose for a moment that people had no teeth and could get along without any—where would we be? The majority of us would be unable to make a living at any other occupation, unless we joined the noble army of plumbers; and then that greatly maligned profession would be overcrowded. The descent from a dentist to a plumber is so gradual and easy that most of us could probably make the slide.

Think how the newspaper reporter would be deprived of his jokes, and reference to the high fees of the dentist. And even the poet would be deprived of his inspiration, for what application would there be to the verse—

> "There was an old man from Torentem;
> He bit on his teeth till he bent 'em.
> When he saw they were bent,
> He said, 'I don't care a cent,
> For I don't own 'em—I rent 'em.' "

Dr. W. C. Graham, Lancaster, O.: The essayist has told us very nicely of the necessity, the physiological necessity of teeth of civilized man.

The subject limits the essayist to civilized man, and yet the uncivilized man no doubt is more in need of teeth than we who profess such a high state of culture and attainment.

The arguments produced are unmistakably true, and I think it would have been profitable for us all if the essayist had gone into the other phases of the subject and told us of the "essentials" of the teeth in their relation to facial contour and speech. The teeth as a means of identification, not only in criminals but in those cases where the features have been so changed by fire or water that the only true identification signs are the teeth, plays a very essential part in our comfort. Man in his most advanced state of civilization is the most complex organism in existence, and must make use of all the provisions of nature in order to supply these organs with their proper nutriment; he must, therefore, be equipped with the proper prerequisites; such we find in the different forms of teeth—incisors for cutting, cuspids for tearing, and molars for grinding; and the cause of the weakening of the teeth of people of today, if such is the case, is not to be found in the fact that their brain capacity has increased, if such is the case, but rather to the modern way of food preparation, with its puddings and pastry, etc., etc.

While the quotations from Dr. Osler are pertinent to the subject, yet the statement that brought him into such popularity was a bit of his wit, and was not intended for a scientific truth. When he is understood, the "Osler limitation of life" will be regarded as a witicism and nothing more.

Dr. Whistler: We certainly cannot doubt that teeth are a necessary adjunct of the other digestive apparatus. Originally the human race had 44 teeth, as some of our Simian ancestors today have. The chief reliance for correction of conditions inviting erosion is, of course, on cleanliness. We must teach our patients to take much better care of their teeth.

Dr. N. S. Hoff, Ann Arbor, Mich.: I am very much interested in the paper. It seems to me a pertinent question to ask, if the teeth are not essential, what are we here for? The question raised is absurd. We certainly know the teeth are essential. It seems to me that Dr. Wright has failed in his paper in just so far as he has not emphasized the positively essential nature of the teeth.

I am gratified with the way the profession is accepting the idea of prophylaxis. It is the most important subject which has been brought before the profession in years. The preservation of the teeth in their normal condition is its object. (Referring to Dr. D. D. Smith's treatment:—Rep.). Faithfully followed up, I believe this treatment is calculated to preserve the teeth of our patients for an indefinite period.

Dr. H. T. Smith: Dr. Wright has presented this subject both from its clinical and its scientific aspect. I am inclined to think that, from a scientific point of view; he established beyond controversy the indispensable nature of the teeth in the human economy.

Dr. C. M. Wright: I am not convinced that the raising of this question is altogether preposterous. I am inclined to think man could get along without teeth. It has been demonstrated that a man can live without a stomach. Of course he would be crippled, and it is not desirable to exist on milled foods solely, perhaps. So long as he uses foods requiring mastication, man cannot, however, ignore the requirements of mastication. The impaction of unmasticated food near the pyloric orifice of the stomach is often responsible for cancer of that organ.

THE POSSIBILITIES OF MODERN DENTISTRY.

BY F. W. KNOWLTON, D. D. S., AKRON, OHIO.

The advance made in recent years, through scientific research, is stimulating the dental profession along the lines whose possibilities would place oral prophylaxis before the world as commanding a place second to none in importance among the many measures which are being promulgated for mutual good. Many in the dental profession see the necessity of this, but the public as yet does not fully realize its importance. Medicine, surgery, dentistry and sanitation are being practiced along lines as laid down by bacteriology with far more success than ever before.

Yet when we consider the conditions as ordinarily existing in the oral cavity, as revealed by this science, is there not good grounds for the belief that dentistry is destined to be recognized as of far greater importance to mankind than has been conceded in the past? It is far from the intention to convey the idea that there should be any stress put on the value of the teeth or the importance of their care for the sake of the teeth alone; but the profession should endeavor the more to instill into the minds of the public the necessity of a clean, healthy mouth as a requisite to the acquirement and preservation of a sound body.

Were this fact generally known, oral conditions that receive little or no attention would be more fully realized, and with better prospects for results. Unquestionably our civilized modes of life and methods of preparing foods are largely the cause of the increasing prevalence of sordes at the gum line, thus furnishing a suitable pabulum for the development and multiplication of microorganisms. This results in the deterioration of the environment of the mouth and necessitates greater vigilance, in order to combat this ever-present menace to health and happiness.

As nearily all the diseases of bacterial origin gain entrance through the mouth, these conditions become a means of contagion and a prolific course of chronic disorders of stomach, kidneys and lungs. Many forms of contagion and infection could be directly and effectually combated by dealing with the mouth conditions in a practical and systematic manner. The dangers arising through expectoration is universally conceded. Laws bearing on this repulsive practice are in force.

Yet slight precautions are taken, commensurate with the needs, towards altering mouth infection even in cases of that dread disease tuberculosis. Periodic change of mouth environment, brought about largely by mechanical expulsion of its contents, and the actual contact of brush with that vulnerable part, the gum line thus restoring functional activity of gum tissue, are chief requisites, from a hygienic point of view, as concerning both personal and public interests.

Several years' experience as dental examiner for the Diamond Match company has afforded an excellent opportunity for observing conditions of the mouth of a class of people, who, as a rule, through ignorance and neglect, fail to follow any of the necessary precautions to a sufficient extent to preserve the teeth or to keep the surrounding tissues in a state of comparative health. They do not appreciate that the conditions existing within the mouth are in the least detrimental to their general health. Statistics compiled from my records of the 2,000 examinations made every three months, and covering a period of about five years, give 36,906 recorded examinations among males and females, varying in ages from 14 to 50 years. Of this number 5,207 males needed 8,675 fillings, 2,282 teeth to be extracted, and 441 teeth to be treated; 4,269 females needed 7,489 fillings, 1,019 extractions, and 312 teeth to be treated.

An essential means of precaution from serious trouble makes necessary in my work the placing of many teeth for extraction, which might under other circumstances be treated and saved. The girls and women being generally considered as more unfavorable subjects, has caused me to follow through their records for a period of four and one-half years to January, 1905, with the following results.

Two thousand and thirty-six whose first examination show that 1,299, 64 per cent., needed 3,546 fillings, 404 needed 790 extractions, and 133 needed 153 teeth treated. Among this number of people there was a total, during four and a half years, of 6,628 fillings, 868 extractions, and 253 teeth treated. Out of these, 2,036 there were 276 who were under surveillance quarterly for the entire four and a half years. Four of these having full upper and lower plates and 15 requiring neither fillings, extractions or teeth treated, 7 per cent. The 257—93 per cent.—remaining with need for operative dentistry, presented 519 cavities the first examination, or an average of 2 to each person, the remaining time there were 1,040 fillings inserted, or 1 filling a year for each person. For extractions there were 56 the first examination and 32 the remaining time. Teeth to be treated there were 27 the first examination and 32 the remaining period. The number of cavities estimated on first examination are very conservative, indeed, while the figures for extracting and treating represent very closely the necessities existing at whatever time the examinations were made. Those who needed 10 or more fillings the entire period numbered 62 people, with 793 fillings to their credit. Those less than 10 fillings numbered 195 people with 766 fillings. Gum conditions presented with fully as important considerations as those involving the teeth, together with opportuniy for demonstrating the degree of effectiveness which simple and rational means afford.

Review of my records, together with knowledge of conditions among the employes who have been under surveillance any considerable length of time also affords an opportunity of knowing somewhat the results, immediate and far-reaching, consequent to the observance of means looking to comparative cleanliness, as well as the urgent need for adoption of active measures in order that the rising generation be relieved from the consequences entailed through the present system. There is a growing belief that the public schools should be a qualified source of knowledge on all topics pertaining to the welfare of the young. The readiness with which school boards are permitting inspection in other lines should encourage the various dental societies to persist in their efforts with increased vigor to see the end that dental inspection with compulsory oral hygiene be installed in all institutions of learning. Such encouragement of habit, moral, mental and physical development, would prove eminently valuable and practical.

◆

IN THE ADMINISTRATION OF ANAESTHETICS, CAN ACCIDENTS AND FAILURES BE AVOIDED?*

BY EGBERT T. LOEFFLER, B. S., D. D. S., ANN ARBOR, MICHIGAN.

So long as we are human, we must expect occasionally to meet with failure or accident in any undertaking or practice, and in spite of every precaution. In many cases, however, yes we might add in the majority of cases, failures and accidents may be traced to some error of observation, of judgment, or of technic. And yet in many instances a most searching examination would fail to reveal the error by avoiding which the failure or accident might have been avoided or prevented. Some of these cases might be designated as unavoidable. It would, however, be difficult to imagine a combination of circumstances, which by careful study and forethought could not have been prevented.

Some of the unpleasant features have come to every man who has had any considerable amount of experience in the administration of anaesthetics, and yet there are certain preventive measures, which, if observed will certainly lessen their frequency.

The lesson of every failure seems very obvious. It ought to teach us to search into the history of the patient and determine by careful examination of every part of the body, if possible, and find out whether or not some predisposition does not exist to explain the disastrous result. To some of us it seems almost as if the operation had a tendency to bring out the unlooked for latent condition.

The measures and means used for preventing undesirable calamities may be quite apparent and yet accidents will happen. Dr. M. H. Richardson in one of his articles says: "Since sudden and unforseen death in people not known to be ill, and those who are attending to daily labors is common enough, it would appear that the surgeon should be familiar with the way in which such death occurs, inasmuch as it would be almost certain to occur in the same manner after operative work. By paying rigid attention to the personal history of the patient and to all the resources of diagnosis, by the recognition of the condition which may predispose to, the symptoms which maybe portend, the means which may prevent, the course which may retrieve disaster, he should be able to exclude some of these cases as inoperable.

---

*Read before the Toledo Dental Society, December, 8, 1905.

Lochte has recently written on this subject, and his paper is based on autopsies of one hundred and one cases of sudden death. "It is not fair," he states, "to claim, as is popularly done, that such cases are stricken down in the bloom of health. In a majority it would have been possible for an examination to have determined that something was wrong." This writer evidently seems to indicate that some patients are aware that their physical condition is not up to par but make light of it. Evidently they were apparently in good condition.

Dr. J. L. Dickey, in his interesting paper on angina pectoris, a few years ago, gives out the following facts:

The first cause, in frequency, of such deaths as above referred to, is disease of the heart, really of the coronaries, with thirty-one victims. Of great importance is the fact that these people were young, only one over fifty years of age, not one had reached the fatal age of fifty-five.

The second cause, in frequency is alcoholism, with twenty-five cases, the great majority being chronic.

The third class the author styles "walking cases" of acute infectious diseases, with twelve victims.

The rest of the material includes seven cerebral apoplexies, seven cases of aneurisms, and some unclassified. In all the males greatly predominated. From the above mentioned statistical report we can readily see that failure and disaster are apt to occur in the practice of any man and often when least expected.

Of course you all understand that one of the gravest conditions of human life is that of anaesthesia. The boundary line between life and death is so closely approached and yet so rarely crossed that it seems absolutely astonishing. This makes the fact very plain, that to one to the most skilled in the use of those agents which abolish sensibility should be entrusted their adminstration.

But you ask how can some of these disastrous results be avoided or prevented? The answer to this all important question has already been hinted at. An answer in detail to every phase of this question would consume too much time and would certainly not come within the meaning and purpose of this discussion.

First of all then, I would say that all those who intend to make it a practice of giving anaesthetics, either as a specialty or in their own private practice should thoroughly familiarize themselves with the normal functions of the human body, and more particularly with those vital functions, respiration and the circulation of which the heart is the prime factor.

In order to understand disease or organs in a perverted condition we must of course have a definite conception or clear picture of the healthy or the physiological. A perfect knowledge of this kind will enable us to detect the slightest deviation from the normal and it at once leads us to look for the cause.

A thorough physical diagnosis is important. The pulse, its peculiarities and its significance with regard to the circulation; the various conditions of the pupil and what they mean; the nerves which control the iris and especially an intimate knowledge of the vital nerve centres in the medulla; and last, but not least by any means, a clear understanding as to how these centres are affected by operations on the fifth pair of nerves.

In studying the action of anaesthetics or of any drugs, for that matter, most of you know very well that we base this action on theory first, then on physiological action, as derived from experimentation on lower animals and finally the crowning test is always the clinical application, for we do not always find that laboratory experiments tally with clinical even after we have eliminated all psychic factors.

There still remains, however, personal equations, idiosyncrasies, and natural differences between artificial diseases of animals and those of the human kind, producing a difference in results.

As an illustration I might say that it has not yet been proven just how general anaesthesia is produced or what part the blood plays in its production, and whether or not the haemoglobin can be considered as a factor. In regard to this point it seems reasonable to suppose that a general anaesthetic would be more injurious to a patient whose blood is low in these constituents than to an individual with a normal amount of haemoglobin. But we do not know this action, so we must, for the present, at least, rely on our clinical experience in drawing our conclusions.

For those of us, therefore, who have just cause for apprehension in this regard and who have escaped anaesthetic dangers, it would be a wise plan to obtain more knowledge on the subject and by all means more practical experience.

It certainly should be urged upon those who wish to become proficient in the adminstration of so potent an agent as an anaesthetis that, unless they fully realize the responsibility and danger assumed, they can never hope to attain even a foundation of what has been so aptly termed an art.

Competent authorities hold that the reckless as well as the timid are equally dangerous, the first because he does not seem to fully realize that his meager knowledge and training alone stand between patient and failure or disaster, or possibly death, the second because he seems to have no faith in his accomplishment, though he may have the very best kind to assure his fitness.

Practically before beginning every operation the apparatus to be used should be carefully examined to see that it is in proper working order, the anaesthetic should be tested, smelt of through the inhaler to see that it has the desired effect. An alternative anaesthetic, should be at hand should the exigencies of the case require it; mouth props, tongue forceps, sponges and holders, a mouth opener, preparations of strychnine, aromatic spirits of ammonia and a good working hypodermic syringe. Suprarenal extracts, the powder in three grain capsules are excellent in case the patient is able to swallow. For an all around restorative oxygen which can be had so conveniently in cylinders is one of the most useful agents to have in the equipment. It needs hardly be mentioned that all instruments, inhaling apparatus etc., should be thoroughly and efficiently cleaned both before and after using.

In conclusion I might say, especially to the timid, that frequently rereading of articles on the physiological action and symptoms of anaesthetics as given in reliable texts is an absolute necessity and would have a great tendency to relieve if not prevent many otherwise embarrassing failures or accidents.

* * *

NOBILITY OF THE DENTAL PROFESSION.*

BY W. T. CHAMBERS, D. D. S., DENVER, COLORADO.

People, generally speaking, do not attribute to our calling that prestige and nobility of character, or that respect which they consider due the other learned professions. Nor are we ourselves prone to revere our work or appreciate its high destiny as we should.

I hope to show briefly that no branch of the medical profession, or any other profession, deserves or can legitimately claim for itself more respect or more honor, from the very first, than ours. Carlisle says that "The beginning contains within it the end and all that pertains thereto." So if we have any standing now, it must mean that the very beginnings of the science and art of dentistry were not ignoble. We know and acknowledge that prior to 100 years ago the evolution of dentistry was involved with the destinies of the tinker, the barber and the blacksmith.

Looking through the history of our craft from the earliest recorded information concerning it, we can trace its very roots in these humble arts. Many of the early practitioners, finding themselves peculiarly skilful in the use of tools, or possessing much dexterity in the use of their hands, turned to the care of the teeth as furnishing a better opportunity for the exercise of their powers. But what of that? Suppose dentistry has laboriously worked itself up from these apparently humble beginnings. It is true of all professions and all trades. I claim our beginnings were not more humble than those of our medical brothers, or our law brothers, and with all reverence to Deity, our theological brothers. The processes of the evolution of dentistry to its present high position are not nearly so humble as those of the other professions. The changes between the early practice of medicine and modern practice are not more marked than those between early and later dentistry. Think of the dreadful absurdities in the practice of medicine 75 years, or even 40 years ago. Diseases in the olden time were treated on the basis of black magic and the evil eye. By such a statement we do not wish to decry the noble advances made by the medical profession in the past 50 years, for all we of the dental profession want is simple justice in any comparisons that may be drawn.

---

*An address before the graduating class, Colorado College of Dental Surgery.

Again, much of good can be said about the primitive occupations which form the beginnings of dentistry. For we must remember that while these trades at present have no prestige, yet a hundred years ago or more they were considered eminently respectable.

When we remember that the humble crafts have produced some of the noblest spirits in all history, we are reconciled. The tinker's trade had its John Bunyon; the blacksmiths were represented by one of the most learned of men, Elihu Burritt, who mastered 52 languages, and the barbers by one of the sweetest poets of all France.

Paul was a tent-maker. And let us remember, with all reverence, that Christ himself was a carpenter. To be sure, it is a far cry between modern dental surgery and these humbler crafts, but we are not ashamed before the world of whatever connection can be established between the two.

Again, our profession goes back much further than we are often led to think. That is, when its practice had taken definite form and some of its practitioners had attained eminence. The father of dental surgery, Pierre Fouchard, lived two centuries ago, and he whom we might term its foster father, the eminent surgeon, Ambroise Pare, lived two centuries before that.

Think of the many beautiful lives that have ennobled our profession since those early days. The union of exalted character and scientific spirit which characterizes our profession today was foreshadowed in the early history of this country in the person of Reverend Doctor Solyman Brown, A. M., L. L. D., M. D., D. D., D.D.S., who could claim in every sense to be a man of letters.

Just here let me enumerate some men of whose work we should be proud. Those before me who are about to enter the dental profession should esteem it an honor to be enrolled in the same profession with them. The work of Doctor W. D. Miller, in demonstrating the cause of dental decay; that of Doctor J. L. Williams of London, in microscopy, as well as that of Doctors Black, Andrews and Cook, deserve especial mention. The first three mentioned gentlemen have satisfied our profession as to the bacterial origin of decay. The discoveries of Doctor Angle of St. Louis and Dr. Case of Chicago, in correcting facial deformities and irregularities of the teeth, have surprised even the most learned members of our profession. The work of Doctor Brophy for cleft palate and hare-lip, operating as he does on very young children, is almost beyond comprehension. At least 500 operations of this character have been performed successfully. Dr. Michaels of Paris has attracted no little attention by his studies and abiltiy to diagnose diseases by analysis of the saliva. Doctor Land of Detroit and Doctor Jenkins of Dresden, Germany, are not to be forgotten in their discovery and perfecting of porcelain fillings.

The commendable work of these men and that of many others, certainly does not detract from the nobility of our profession.

In this connection we should claim greater prominence in the discovery of anesthesia than is usually attributed to us. In 1844, at a private exhibition of the intoxicating properties of nitrous oxide gas, Doctor Horace Wells, a practicing dentist, who was present, after witnessing the experiments, remarked that he believed a person could have a tooth extracted while under the influence of gas, and not experience pain. This experiment was successfully performed on Doctor Wells himself by the well-known dentist, Doctor J. M. Riggs. In the following few weeks, Doctor Wells administered it frequently to his patients with excellent results. The sane dentist later interested physicians in this process with a view to its use in surgery, particularly a Doctor Morton, and the familiarizing of this physician's mind with the idea that surgical anesthesia was possible led to the discovery of ether. Later chloroform followed, apparently suggested by the results of dental anesthesia. Hence, it appears that the laurels belong to the dentists for the real discovery of the wonders of anesthesia.

The international character of early dentistry in America is worthy of special note. No profession ever received more inspiration from eminent foreign practitioners than ours. Dental science was first brought to America by two patriotic young Frenchmen, towards the close of the revolutionary war, Jean Francois Lemaire and James Gardette. This was about the year 1780. During the winter of 1781-82 the French and American armies were in winter quarters near Providence, R. I., and we find a friendship springing up between these two young Frenchmen and a youth by the name of Josiah Flagg, who was destined to be the first native-born American dentist. So it requires but a little stretch of the imagination to locate the first school for dental science instruction in the United Sates around this revolutionary camp fire.

At about this period of dental history in this country well-educated and capable Englishmen, Frenchmen, Germans and Irishmen came to this country and helped lay the foundation for this profession. In these early days many of our best men, native Americans, practiced successfully in other countries.

The history of our pioneers will show that they were honored and respected both professionally and socially. There were, to be sure, many irregular practitioners, but this is true of all professions, and an army is not to be judged by its camp followers, but by its advance guard.

We yield to no profession the palm of superiority, mentally or morally, nor do we in beneficence. Emerson says in one of his essays, "He is great who confers the most benefits," and by this standard we yield to no other profession. The close relationship of dental practitioners to their clientele demands the highest order of ethics, and no man can be a good dentist who is not a good citizen, and in every sense a good man.

In addressing a parting word to the members of the graduating class, let me urge the importance of lofty ideals, both personal and professional. After all that may be said of a man's outfit, his instruments and his training, character is the great indispensable possession. It is character that sustains and quickens society. Character underlies the great achievements of the modern world. It is the true greatness of the man, and the real source of his power and accomplishments. It was what Napoleon was that justified Wellington's statement that his presence on the field was worth 40,000 men. The character of our own Washington is the secret of his influence upon our institutions to the end of time.

The man of character can stand serene and strong even when all the accidents such as money, position and fame are swept away. He has a treasure which can never be lost.

* * *

UNNECESSARY PAIN IN DENTAL OPERATIONS.*

BY DR. JOHN R. MARKEL, COLUMBUS, OHIO.

All vocations in life have some disagreeable features.

The disagreeable side of dental surgery is the fact that according to present methods we must inflict more or less pain upon all persons who come to our offices to have their teeth attended to. In the wisdom of the Creator, man was so made that in his varied experiences he naturally tries to avoid as much as possible of physical pain. It is a difficult matter to tell what pain really is. And some philosophers and Christian scientists would have us believe there is no such thing. If you have the toothache it is merely an error of the mind—in your tooth.

Pain is a distinct nerve-commotion in the brain set up by over-stimulation of a sensory nerve fibril. This is only the physiological fact. The nervous influence then passes over into the mind and the full content of the feeling is determined by the temperament of the person who experiences it. The psychical part is still more obscure.

The nervous elements with which the dental surgeon is chiefly concerned are those in the dentin of the teeth, in the pulp proper, in the peridental membrane, and in the gingivæ, or gums. These nerves are of a high order of structure, and they are very sensitive to chemical or mechanical stimuli. But although these tissues are naturally very susceptible to irritation, I firmly believe that more pain is inflicted in many ways than is necessary.

One afternoon, during my senior year at college, I stood in the infirmary by the chair of a junior student who was operating for a boy about twelve years old. The operation was the removal of a live pulp from an inferior first molar by pressure anesthesia with cocain. Being in a hurry, the cocain was not left in the cavity a sufficient length of time to produce insensibility. But the pulp was taken out, nevertheless, and the poor boy suffered unalloyed torture. He was a boy, and therefore banned from all consideration.

Our patients' remarks are sometimes very significant. The dental engine is frequently condemned as an instrument of torture. A patient once said to me while I was engaged in preparing a cavity near the gingival line in a superior cuspid for a gold filling: "Bore away if you think there's no hereafter." No one contemplates the dental engine with pleasure. But by using sharp, well selected burs, and alternating their use with keen-edged excavators, most cavities are prepared with little pain.

---

*Read before the Columbus Dental Society.

It is here that a thorough knowledge of chemistry and materia medica is necessary. For in many cases pain can be prevented or made less severe by the intelligent use of anesthetics and obtundents. Of all remedies I have tried the one which has proven most effective is the use of fresh, full strength carbolic acid in the cavity for a few minutes, after which the cavity is carefully dried by gentle puffs of warmed air. If the acid is applied hot on a small piece of spunk it is still more effective.

More pain is caused by excavating in a wet cavity. Formerly it was much more difficult to keep the cavity dry. Now, since rubber cloth has come into this use this difficulty can be done away with. However, a clumsy adjustment of the rubber dam over the teeth may give rise to unnecessary pain. The fixing of ligatures between the teeth with the "whole arm movement" is apt to be resented. They are used many times when dryness could be had without them by merely punching a hole one size smaller in the dam.

Dental clamps, when not deftly applied, give rise to great physical discmomfort. If they are not surgically clean, serious inflammation may follow. The operator must have a well selected variety to suit all cases, and they must be applied to the tooth so as not to impinge upon the gums.

Another instrument, the careless use of which is liable to endanger the dentist's chances of reaching heaven, is the tooth separator. It is sometimes required to separate the teeth in performing an operation. Where at all practicable it is best to use the slow method of separating by forcing seaweed or gutta-percha between the teeth. Where immediate separation is called for an orangewood wedge is less painful than the separator, since the gum tissue is not compressed. In those cases where the separator is employed, the teeth should be moved slowly. The highest success will be attained by the operator who never forgets that instrumentation hurts and who uses heroic treatment only when it is absolutely necessary.

Another medium for pain culture is found in a course of regulating the teeth. A great deal of pain and soreness is unavoidable while moving the teeth about, but there is also a large amount carelessly given by over-anxious operators too eager to accomplish in two days what should rightly take as many weeks. The way in which nature, assisted by mechanical appliances, straightens the teeth must first be thoroughly understood in order that it may be neatly done.

The patients who draw out the most delicate manipulative skill in the dental surgeon are the children for whom he labors. The pain which a child experiences in the dental chair is largely mental. His whole attention is directed upon the proceedings, and if hurt he cries. Crying is a phenomenon inharmonious with dental operations. A dentist should always tell the truth to a child or tell him nothing at all. One method is to say that you are obliged to hurt him a little, but not more than he can bear, and that he should get ready for it. Or his attention should be diverted by talking interestingly about common things which he can readily understand.

Next after the child, as far as tact and diplomacy are concerned, is the nervous patient. Pain is differently felt by persons of different temperaments. Some persons are little sensitive to painful impressions of any kind, while others suffer intensely from slight causes. In exceptional cases of nervous strain it is modern practice to administer a nerve sedative about twenty minutes previous to the operation, such as the following:

℞	Morphia sulphas	gr. ¼
	Bourbon whiskey	f ℥i

(Of course let it be understand this is to be administered to the *patient.*)

So far I have endeavored to discuss a few of the main conditions wherein unnecessary pain is inflicted. But there are many minor things of which mere mention will be made to put us on our guard. The patient's head should never be used thoughtlessly as a fulcrum for hands or instruments. Catching the lip beneath the thumb is bad practice. Nibbling at a pulp that is non-devitalized is inhuman. Unwarrantable pain is caused by forcing ligatures too high, or in tying on gold collars without first applying cocain to the gum margins. No patient should be asked to sit in the chair longer than three hours at one time. Cold air in the chip-blower and cold water in the syringe are not permissible. I believe that constant care and persistent striving to reduce pain to a minimum may lead to useful discoveries. For the operator who is wide awake and faces the disagreeable features of his calling is bound to conquer them in the right time and advance beyond what is already known and achieved.

As yet there is no such thing as painless dentistry, the alluring advertising columns of the newspapers notwithstanding. It may be that the key to it is to be foundi n hypnotism. Or it may be that nitrous oxide gas shall be employed for all dental operations. However, it is the duty of every member of the profession to give this feature of his life vocation some real, genuine, exhaustive thought and experiment. Some good may come of it. And should any one of us happily succeed in changing the "feeling-tone" of dental operations from the present condition of more or less pain to the advanced condition of no pain at all, then the dental surgeon of the remote future will necessarily be required to make his operations upon the teeth a real "picnic" occasion.

DISEASES OF THE ANTRUM OF HIGHMORE.*

BY DR. F. M. BARNS, OMAHA, NEBRASKA.

In this paper upon "Diseases of the Autrum of Highmore," it is not my intention to set forth any new thoughts, but to briefly consider the subject in a general way and discuss some points of interest of this disease which is more or less common.

I prefer to classify the disease as follows, rather than use classification given by some authors:

First: Catarrhal inflammation—acute and chronic.

Second: Suppurative inflammation—or purulent empyema, acute and chronic.

Third: Atrophic.

Fourth: Necrosis of bony walls.

Fifth: Tumors or mucocele.

Sixth: Specific.

Seventh: Traumatic.

---

*Read before the Nebraska State Dental Society, May, 1905.

ETIOLOGICAL FACTORS.

Much has been said by many notable specialists upon this subject. Some that the nose, and some that the teeth are the most frequent causative factors, but from the opinions of some of the best authors and my own experience, I find the teeth to be the more prominent factor in the disease.

Marshall classifies diseases of the teeth which may produce inflammations of the antrum as follows:

a. Devitilized teeth.

b. Alveolar abscess.

c. Malposed teeth.

a. Devitalized pulp in the root of a tooth which penetrates the floor of the antrum may cause septic inflammation. Tilly says his experience leads him to believe that dental caries is by far the most frequent cause of chronic antral empyema. Although the crown of the tooth may seem healthy, there may be disease at the roots, carrying infection to the antrum.

b. Alveolar abscess occurring between the roots of an apparently healthy tooth or between the roots of healthy teeth in the region of the bicuspids and molars, may establish an inflammation in the antrum, on account of the floor being thin and the abscess pointing into the sinus.

c. Malposed teeth may cause septic inflammation from being unable to take their normal position in the arch and being in close relation to or portruding through the floor of the antrum.

Hypertrophic and atrophic rhinitis may cause antral disease by pressure of the middle turbinate against, or stenosis of, antrum maxillar due to thickened mucus membrane cutting off communication between the antrum and nasal passage.

Nasal and antral polyps are also frequent causes. Some cases may also be traced to discharges from the frontal or ethmoidal sinuses, entering the normal antral opening or by abnormal communication. Powder insufflations and foreign bodies are not to be forgotten.

Traumatic injury in the maxillary sinuses are not very common but occurs with crushing injuries and gun-shot wounds causing fracture and comminution of maxillary bones.

THE SYMPTOMS.

The symptoms vary with the intensity of the disease and the potency of the antrum. Acute empyema is usually attended with severe pain and often neuralgia, tenderness of the teeth and palate on corresponding side, a feeling of fullness in the cheek, sense of pressure and even protrusion of eyeball. The corresponding nasal passage may or may not be patent; in case it is, characteristic pus is likely to be found oozing into the middle meatus, especially if this pus be wiped away and the head inclined to a position favoring exit of the pus through the antrum. If the escape of the secretions from the antrum be prevented and gradual accumulation takes place, there is likely to follow severe symptoms, as distention and thinning of the antral walls, allowing the swelling to became noticeable in all directions; palpation, revealing a parchment-like crepitation of the walls, and inflammatory condition of overlaying tissues, conjestion and bulging of the eyeball from thinning of the floor of the orbit and protrusion into the orbital cavity, causing paralysis of the optic nerve from pressure and consequent amaurosis or amblyopia. Soreness and elongation of teeth on affected side, with bulging of the palate and extremely sore gums. Absorption of the walls goes on and the secretion breaks through into the soft tissues in the direction of the least resistance, which is frequently through the palatal process into the mouth. The formation of pus in acute cases is attended with chills and elevation of temperature and general systemic weakness.

The chronic inflammations are seldom attended with systemiccondion except during presence of acute exacubation and indeed most of the local symptoms may be absent or not prominent where there is little or no stenosis of the antrum. In the chronic form we may have only a tenderness along the alveolar ridge, or over a tooth, or in the region of the middle meatus of the nose; discharge into the nose and odor may or may not be noticeable; the patient complaining only of soreness of a tooth and a sensation of something moving back and forth in the region of the antrum with a backward and forward movement of the head. However, the discharge is usually a prominent symptom, varying in amount from a slight to a considerable quantity and may bring on gastric disorders from the patient lying on the unaffected side at night and swallowing the secretions, producing nausea and sometimes vomiting in the morning.

DIAGNOSTIC SIGNS.

The diagnostic signs have mostly been considered in the symptoms a carious devitilized, or abscessed tooth or abnormal conditions in the nose should be looked upon with suspicion.

Malignant and benign tumors and bony excrescences may be confounded with suppuration of the sinus, but differential diagnosis may usually be made by exploratory puncture or incision or by the electric mouth-lamp being placed in the patient's mouth with lips closed and the room darkened. Through normal tissues the light will be quite readily transmitted through the cheeks and lower eyelids. While if the antrum is filled with a solid tumor the light will be entirely obstructed, and in case of thick mucus or pus the light will be only partially obstructed. I consider the electric lamp very useful and valuable in diagnosing tumor growths from inflammations of antrum, but for diagnosing inflammatory conditions attended with mucus or pus from normal conditions, I do not think it is positive, from the fact that light transmission would not be the same normally, if there was a difference in the thickness of the bony wall of the two sides which is not uncommon, and thereby make diagnosis uncertain if the wall on the suspicious side were a trifle thickened, in either case impeding the light, whether it be from presence of secretion or thickened bony wall.

TREATMENT.

Treatment of simple catarrahl conditions of nasal origin can sometimes be accomplished by applying adrenalin chloride or an eight per cent. cocaine solution to antrum and relieving obstructed condition, and it may also sometimes be irrigated from this natural opening.

Empyema, which is classed sometimes as a disease but which I believe to be only a condition, can nearly always be relieved in this way.

The treatment in all cases is to:

First: Remove the exciting cause.

Second: Complete evacuation of cavity.

Third: Attain perfect drainage.

If the disease is of dental origin the offending tooth must be properly treated or removed. If the tooth is beyond hope of restoration, it may be extracted and the alveolus enlarged and opened into antrum.

This is a very satisfactory method of securing removal of cause, evacuation of cavity and drainage.

Other methods of opening the antrum are, to open through the canine fossa between the roots of the second bicuspid and first molar on the side of the process, or the sinus may be opened through the inferior meatus in the nose.

An important thing in operating on cases of long standing is to make the opening large enough to examine the interior thoroughly with the little finger for polyp growths, bony spurs and partitions which might provoke secretion of or cause retention of the fluids. If any of these bony growths are found, they must be curetted away and polyps removed with snare or suitable instruments.

I use for irrigating the cavity, glyco-thymoline, one ounce to warm water normal salt solution four to six ounces, following this with dioxygen and warm normal salt solution one to five and this in turn followed by the first solution. The cavity is to be thoroughly drained and sprayed with a three per cent. solution of camphor menthol in alboline or glycerine and a wick of sterilized gauze placed in the opening.

In cases of empyema where it is necessary to curette the walls of the antrum it is of course necessary to pack it in a proper manner. The packing of this sinus with all kinds of gauze and under all conditions, sometimes does more injury than good. Not long since I saw with another dentist a case of antrum disease, which he had kept packed tightly for several weeks with iodoform gauze. He had a typical case of iodoformism in the antrum as a result. I do not think packing is good treatment except as I have mentioned.

As to packing this cavity with gauze, it should not be packed tightly, simply enough packed in to loosely fill the cavity and so it will not work out, nor cause irritation. I use boric acid gauze or dust cavity with aristol and pack with plain sterilized gauze. Instead of a tube in the opening, I use a narrow piece of gauze about three inches long, roll into a wick, fold in the middle, and pass the ends into the antrum. This keeps the opening patent, prevents food from entering, and is a good method of drainage.

After the fetid odor abates, the dioxygen solution is discontinued and the glyco-thymoline solution is used as a spray instead of irrigation, as this cavity is intended for air and not for fluid, and the spray will cleanse the cavity with less irritation to the tissues. Powder insufflations as aristol-bismuth, etc., are objectionable unless the powder is thoroughly removed after each subsequent treatment, otherwise, it crusts together and irritates the membrane. The treatments may be done twice a day at first and diminished as the discharge decreases, and great care used not to overtreat, the condition keeping up under irritation. I prefer the gauze for the opening, because it keeps out food particles and mucus from the mouth and permits the large opening to slowly heal, and drainage is constantly kept up as with the tube. Preceding the treatment of the cavity each time, the nose and the mouth should be thoroughly sprayed with the same alkaline solution and the patient instructed to not blow the nose with force, as this act tends to force mucus into the antrum and increase the irritation.

Authors referred to, Marshall's ''Disease and Injuries of the Mouth and Jaw,'' Kyles' ''Diseases of the Nose and Throat,'' American Text Enc., ''Ear, Nose and Throat.''

REPORT OF THE BOARD OF DENTAL EXAMINERS OF THE STATE OF OHIO.*

BY H. C. BROWN, D. D. S., SECRETARY, COLUMBUS, OHIO.

The board of dental examiners of the state of Ohio, fully recognizing the close relation that should exist between the state society and the board, requested that, as secretary, I prepare and submit a report of our work for the past year.

Two examinations have been conducted this year in accordance with the provisions of our law.

At the June examination we had 21 applicants, 16 of whom passed.

---

*Read before the Ohio State Dental Society, Columbus, Dec., 1905.

At the November examination we had six new applicants and three for re-examination, but as this examination just closed, the results are not known at this time.

From December 1, 1904, to December 1, 1905, we have issued 326 original and four duplicate certificates, a total of 330, as follows:

Graduates of the Ohio colleges registered without examination......	277
Applicants registered under the exemption clause of law as having been in continuous practice in Ohio since January 1, 1893.........	25
Passed June examination, 16; passed Nov., '04, examination, 8.......	24
Duplicate certificates issued..................................	4
	330

Thus you will note that 302 of the 330 have been registered and licensed under the following clause in law: "The board shall excuse from examination all graduates of dental colleges of this state up to and including the June, 1905, session of the board; also any person, or all persons who has, or have, been the proprietor, or proprietors, of a dental office or a place or performing dental work in this state, continuously since January 1, 1893. Such person or persons shall be licensed and registered upon application and paying license fee as is herein provided."

We recognized the above clause to be somewhat ambiguous, but it has generally been interpreted to mean that all those applying under this clause must fully prosecute their rights prior to June, 1905, session of the board, but a recent ruling from the attorney-general's office holds that such is not necessary and that the board should recognize an application, properly filed from a graduate of one of the Ohio colleges who graduated prior to the June, 1905, session of the board, regardless of the time the application is filed, as no specific time is mentioned in which such application should be made. This decision holds equally true with reference to those who have been in practice in this state continuously since January 1, 1893.

However, the large number registered under this clause during the year is due to the fact that it was generally construed by the board and profession to mean that after the June, 1905, session of the board, all applicants for license to practice dentistry in Ohio must first have received a diploma from some legally chartered dental college and then pass the examination as given by board, except that the board should at any time deem it wise to recognize the following clause:

"Upon a unanimous vote of the board, said board may excuse from examination an applicant holding a license to practice in some state requiring a diploma and examination, upon the payment of the examination fee," but will state we have never recognized an applicant under this clause.

In view of the existing conditions, we are of the opinion that certain amendments to our law should be secured at the coming session of the legislature. The clause referring to the graduates of the Ohio colleges and proprietors of dental offices, together with the one admitting under-graduates to examination, were supposed to have eliminated themselves and should be dropped, and dates or meeting changed, as now we are frequently compelled to run into a legal holiday, Thanksgiving day. And for the betterment of our law, as we see it, some other changes should be made and some new feature embodied.

The board should be given authority, under certain conditions, to revoke certificates, and it should be made a misdemeanor for an under-graduate, even though a licensed dentist, to use a degree to which he is not entitled, as this is a misrepresentation to the public.

Our prosecutions for this period are as follows: Four convictions, one case lost, one case pending in Richland county, common pleas court.

The supreme court has just affirmed the lower courts in the case appealed there by one Ellsworth Glenn, and this fully establishes, beyond question, our authority to enforce our law.

The case lost was that of a licensed physician who conducted a tent show, selling medicine and extracting teeth at 50 cents per tooth. We proved our charge as filed in affidavit, but under the ruling of court we could not submit evidence to prove that he was doing this as a "specialty," and the one case cited did not make him specialist.

With our prosecution it is very difficult to secure just the required evidence, and we would bespeak the hearty co-operation of the profession in the localities where the violation of the law occurs, by assisting in securing such information and evidence.

Our report and list of registered dentists of Ohio mailed to the profession of the state, together with an occasional conviction, has very naturally reduced the large list of violators, but there remains much to be done along this line.

ANAESTHETICS USEFUL IN DENTISTRY.*

BY A. C. HEWETT, L. L. B., M. D., CHICAGO, ILL.

(Continued from Page 288, Feb'y Summary).

A BIT OF HISTORY AND SOMETHING MORE OF ANALGESIA.

In the year 1811 Sir James Young Simpson was born. In 1832 he became entitled to and received his degree of Doctor of Medicine.

In 1839 he was elected to the chair of midwifery, and the great heart of the man with the fertile brain remembered that he had a mother, and that in pain she had borne him, and God bless his memory, he saw the peril, and pitied the lot of his mother, not only, but sighed for the lot of woman that reap the joys of motherhood she had to pass the gate of agony. He resorted to the use of chloric ether to mitigate her woes, and lessen her dread. Great was his success and grateful were Scottish mothers in spite of the vile odors of ether and its dreadful sequelæ nausea and vomiting. But he sought something better and applied to Professor David Waldie, of Liverpool, an expert Apothecary. Professor Waldie, familiar with the components of ether seized upon the active principle of that drug, named it Chloroform, and took it to his patron Simpson, who was not slow to find its anaesthetic potency, and apply it in labor cases and obstetrical surgery. Thus he used chloroform more than 1,000 times without a fatality. But so slow are people to move that not till eight years later was there a public trial of it, and an authoritative proclamation of its benisons, rendering it official.

A year before this on this side of the ocean two young men were keeping open eyes on Dr. Simpson and the "wonderful things he did." Dr. Oliver Wendell Holmes was one of them. in 1846 he gave the conditions lethal drugs produced a definative name, to wit anaesthesia the noun, anaesthetic the adjective.

The other young man, and younger than Dr. Holmes, was he who addresses you.

I was born May 10, 1828, of peculiar parentage. My father Scotch-English, a distant relative of Sir Frederick Hewett of London, England, teacher author, anaesthetist to King Edward—and here I may be excused if I digress sufficiently to relate that he (Sir Frederick) was the first eminent man (and undite he is) who *demonstrated* upon the person of a man of no less note than England's King Edward, that there is less danger in operating (even for appendicitis) under partial anaesthesia than to give full play to anaesthetic force when the patient has cardiac weakness.

---

*A lecture delivered at The Ransom & Randolph Clinical Exhibit, Toledo, O., December, 12-14 1905.

My mother was of Welsh-English lineage, daughter of a distinguished physician, resident of the "Holland Purchase" western New York, named Stephen Tainter.

In winter of 1847-8 I became principal of a union school in a village of about 6000 inhabitants, in which Bates Botsford was a popular dentist. I soon formed his acquaintance, secured his friendship and became his night pupil, and odd hour student. So during the year I taught greek, latin and mathematics through the day time, and evenings studied anatomy and physiology, and absorbed what I could of practical dentistry. I allowed myself only four hours of each night for sleep. Early evenings were spent with Dr. Botsford or with a bevy of fun loving boys. From ten till midnight, and from four A. M. till breakfast time I worked at study. In the meantime I had kept tab, so to speak, on Professor Simpson and his anaesthetic achievements with chloroform.

I wrote to New York city for a couple of ounces of chloroform, received word "none here." I replied "send to London," and *waited.*

In early summer of 1850 I commenced the study of medicine under the tutelege of Dr. Sterling W. Allen, of Mount Clemens, Mich. He was an excellent physician, had an extensive practice, was a level headed brainy man; well calculated to put a damper on my dare-devil ambition, that I now judge to be sadly needed.

Dr Allen was handicapped as to surgery by a lack of tactical, manual, dexterity,—a very respectable share of which I was even then the possessor. In the interem my two ounces of chloroform had travelled its slow course across the Atlantic, and by water and stage to Michigan into my possession, to the appalling depletion of my too light purse to the amount of ten dollars, a huge drain then for me, as I had only ambition, hope, and a reckless courage, and a body of an athlete, with which to replenish the outlay. Young as I was I had commercialism sufficiently developed to demand of my tutor my own fees for tooth extracting, and a percentage of fees for *his* surgery when I personally operated. My knowledge of anatomy gained under Dr. Botsford stood to me in good stead, and I kept out of bankruptcy. One case I will mention, in illustration.

A French woman had Scirrhus of the right mammary gland and of the lymphatic glands of the right axilla. Excision was Dr. Allen's decision. Dr. Allen administered the chloroform, I used tenaculurn, thumb pliers, ligature, and bistoury. During the operation I noted that blood did not follow the knife. I looked at the face of the patient, thought her dead; struck Dr. Allen's hand and mask from the face of the patient, and hyperanaesthetized though she was, resumed my dissection, bound to have tumor and glands. Fortunately for us the stimulus of the knife, and pure air restored her.

The wound was ghastly, but healed kindly, and the operation was pronounced a *success* and written up as such by Robert Eldridge, one time secretary of State for, Michigan under Governor Lewis Cass.

Of course the success of chloroform was complete (quite too marked a success) and I became famous *in the newspapers.*

Mark, at that time no law intervened to check any one from medical, or surgical, or dental practice.

I have thus spoken of myself much, too much, had I not been pioneer in all that region as advocate of chloroform. I had no *authority* for its use except Dr. Simpson, and he so far away. He had then administered chloroform ten thousand times without a fatality, and I thought what a man has done I, (boy that I was) could do. Calls were numerous for surgical interference; Dr. Allen was proud of his student, and I—remembered my mother's maxim;—"To do, what you are called upon to perform, and know how to do, is to reward your teacher, and discharge your own responsibility. Study of anatomy under Dr. Botsford had fairly well prepared me to read my fields of surgery. My father had taught me never to apply water to a wound. His motto "Pick away dirt and slivers and do the wound up in its blood" stood me in good stead, and secured a surprising success. Later I attended college, took my degree as Dr. of Medicine, and returned to the field of my student-time practice, using chloroform exclusively in surgery and midwifery.

I have thus given autobiography, not for self laudation, but a leading up to a very important discovery. Whether prior to any other persons I do not know or care. It was *original* then with myself;—*The discovery of analgesia.**

ANALGESIA.

Now that *analgesia* has been found I deem it best to define it so that it may stand out clearly in your minds in contradistinction to *anaesthesia.*

Robly Dunglison defines analgesia as (an-algos, pain,) stupor; insensibility; insensibility to pain, but not to tactile or other impressions. This definition is found first(I think) in the edition which was published in 1893. I have been unable to find the word or its definition in any medical lexicon of an earlier date.

I may as well at this point define anaesthesia. Privation of sensation especially that of touch. (Dunglison's Medical Dictionary). I will add that it traduces privation of consciousness.

As announced for this address I am to treat of *anaesthetics useful in dentistry.*

It is well to understand that to produce analgesia an anaesthetic must be used. In all the cases I have specalized chloroform was used.

Are anaesthetics useful in dentistry? I aver it. There is not a dental office in the land (that has patronage) that would not be benefited by a skilled use of anaesthetics, to the point of analgesia, even if no farther.

When I removed to Chicago to practice dentistry, more than twenty years ago, I was a stranger to all in that city except one man. Within four weeks from opening my office my appointment book was full for four weeks ahead; and for nearly eighteen years I never had a day unclaimed unless I looked ahead and cut it out for travel, fishing, sea-siding or attendance on conventions. During that eighteen years I gathered a harvest of over $100,000. Not because I was a better workman than scores around me, not because I was a more attractive man or dentist. I was not. It was because I used anaesthetics successfully and humanely. Patients came to me from all states and territories of the U. S. Not a year since, a young lady came to me from Oregon to have one tooth extracted. The daughter of a three times millionare. Saving or avoiding pain, and the dread of it, impelled her to the unusual proceeding; her father laughing at her, but saying "Go if you wish to, Dr. Hewett will not hurt you, and I am not afraid to trust you in his care."

---

*NOTE:—This discovery I made in the year 1857. Under the analgesic effect of chloroform I "cut around" and extracted an inferior molar from my own jaw without producing the least pain. The history of that extraction and subsequent experiments I expect soon to give elsewhere.

You, and *you*, and *you*, want it; whether you know it or not. Your patients want it, or they would did they know. What dentist do you think I should apply to, did he not use anaesthetics, or permit me so to do while in his chair? Last Thursday a dentist from Arkansas, "Frank G. Stover, D. D. S.," came to my office and asked me to go with him to a friend of his, and administer airoform to him while his friend excavated two sensitive cavities. I said "yes," went, gave him the anaesthetic with a result he characterized as "Great," "Charming," "Worth coming to Chicago for." The cavities were excavated in one fourth of the time that it would have taken without the analgesia devoid of dread, and painlessly; he holding the face piece for inhalation.

I will make a prediction: In the near future no operative dental office will be deemed complete without it furnishes some form of outfit for successful administration of anaesthetics for *daily common use*, in absolute pain avoidance. Nay, more; long before prophylaxis shall have rendered the bur, spear-point-drill, and carborundum wheel useless, all oral surgery, by specialists, and all minor surgery will be performed painlessly and without dread, while the patients are under the influence only of this wonderful, benign, safely and easily produced influence, analgesia. Still farther, the time will come when you can count the operations on the fingers of one hand minus the thumb, that cannot be painlessly performed while the patient is perfectly conscious. Do you ask the use, the need of such emphasis on analgesia, I reply that until analgesia is substituted for anaesthesia deaths will occur resultant upon shock of hyper-anaesthesia and of operation; more from the former than latter. Will some urge that many anaesthesias are produced and the patients recover, that Dr. Simpson proved this ten thousand times, and quote your speaker with producing full anaesthesias an equal or greater number of times without fatality in a single instance, and I will say, true, *but* insist that at any of the twenty thousand times that I gave it to full anaesthesia danger of a fatality was all too iminent. Sandow or Sampson if alive, might suspend me at arms length over an abyss one thousand feet deep over a floor of rubble rock, but I should feel much safer one thousand feet from the edge of the precipice.

A full, prolonged *anaesthesia*, consciousness and sensation gone, from whatever cause is not without its peril. When actual death begins its work its fingers are passed upon arterioles, veinlets and capillaries, causing arrest of flow of oxygenated, reddened blood, through that wonderful network of vascularity connecting larger veins and arteries.

The most complete anaesthesia I know, is that produced by drowning in water; and though drowned persons are frequently recuscitated, it were a rash surgeon who for the sake of a painless amputation or laparotomy should drown his patient in a warm bath; yet arterioles, capillaries and veinlets are as actually drowned in the one case as the other. Air is much more easily forced into bronchia and air cells following the anaesthetic, than the water, and that is the sole reason that one is safer than the other.

On the other hand analgesia so easily produced, only holds the recognition of pain in abeyance, while the other functions of the body are untethered; a fact that scientists are slow to learn.

It took James Y. Simpson eight years after chloroform was discovered to get public recognition of the power of the drug to subrogate pain, and yet, ten thousand times had he demonstrated it. Twenty thousand times have I demonstrated the potency of chloroform; and that fatalities did not follow my earlier career calls for more gratitude to the good Father, The Great Loving Guide, and Protector than I can express.

I have spoken of chloroform at the length that you doubtless realize, because amidst the more than one hundred other anaesthetic agencies I might name and describe had I time, chloroform, stands high above all others, the more than "Prince Royal," —*Crowned King* of the realm bordering Lethe's flood.

I am here not to war on any form of benison to be afforded to pain burdened humanity. Each anaesthetic, of that more than one hundred, barring all others as unavailable would be a priceless boon to humanity; but from among them all there are three, which were I to practice either dentistry or surgery, or both for another fifty years I should strive to possess in perfection, using either one of them singly, or in pairs helping one another to avoid pain and the dread of it.

This trinity, priceless, to be worshipped as a lover adores his sweet-heart, or a mother, her nursling tugging at her breast. I name this triune force cocain, nitrous oxide and chloroform; each of which should be used as occasion requires, but each looked upon with both adoration and fear. It is unfortunate that all substances greatly good carry within them seductions luring to death. The poppy bearing sleep and idiocy. Cocain a surcease from pain, and a tonic of tonics, an antiphlogistic of marvellous value very little known, and alas, bearing idiotic imbecility, lying cunning of libidinous beastiality, effects fitly described in the phrase "Cocain Fiend." Chloroform, the heart stimulant at first, and the respiratory assassin afterward—life saving from shock and pain, and life destroyer from shock at first inhalations; and fatal often from hyper-anaesthesia. How shall we separate the benisons from the destructive. Alas, that we have not schools where discriminations can be taught, and experts equipped for safe, sure, ready benefactions.

But increasing numbers in page headings admonish me that I can only indicate my preference of anaesthetics without giving reasons, and add a few terse directions for using the three named, in dental offices in aid of dental practice, operative and in oral surgery.

NITROUS OXIDE.

First *Gaseous Oxide of Nitrogen,* Laughing Gas"—only for extraction of teeth where from idiosyncrasy or prejudice chloroform will not be accepted by the patient.

PREPARATIONS FOR AND MODE OF GIVING.

It should never be given from a rubber gas bag connected directly to cylinder of liquid gas. Expansion from the liquid form to gaseous, causes it to be intensely cold. Inhalation at that temperature often causes shock, all too frequently fatal. If fatality does not follow, cyanosis, jactitation and spasmodic action supervene, dangerous to weakened internal viscera. Recent deaths have occurred from such exhibitions of gas.

The liquified gas should first be expanded to lighter form, through water in a gasometer, and from thence taken with a percentage of air or Oxygen, as advocated by Sir Frederick W. Hewett, M. D. in his late edition of 1905. *"The Administration of Nitrous Oxide, and Oxygen."* and not given too rapidly at first. Shock may follow too rapid an ingestion. To givers of gas I commend his work, and a careful following after.

COCAIN.

There is a benison in this product of the erythroxylon coca, little understood. There is a danger in it too; quite too well manifest in mental, moral, and physical wrecks of the habitual users, I have hinted at before. In the way commended herein it is safe, efficient and helpful to the operator and patient.

Its use should precede every case of extraction, of every prodding, picking use of efficient searchers; whenever there is a case of "sore teeth," "dental lameness" or "pericemental inflammation" and in all cases where almost hysterical nervousness attends a patient, male or female to the operating chair. All child patients should have its aid. Its aid should be made available precedent to the use of all volatile anaesthetics including ether, chloroform, airoform, somnoform or any other form of vaporized anaesthetic.

I give three formulas for the efficiency and value of which I can vouch:

LOCAL ANAESTHETICS FOR CHILDREN.

FIRST.

Specific Echafolta (Lloyd's)	dr.	2
Mur, Cocain (Coarse Crystals)	gr.	10
Syrup Simplex Ad.	oz.	1

M. Sig.

Apply sparingly to gums near the tooth to be operated on. Wait a minute or two before operating or giving anaesthetic.

SECOND.

℞ Campho Phenique (Original Package)
Mur. Cocain to saturation

M. Sig. Apply to gums before operating. This was given to the profession by that progressive big hearted St. Louis dentist, Burton Lee Thorpe. It is excellent.

THIRD.

℞	Ol. Caryophylla	dr.	2
	Specific Cactus (Lloyd's)	dr.	2
	Acid Carbolic (Crystals)	gr.	20
	Mur. Cocain (Coarse Crystals)	gr.	96
	Glycerin Purificatum Ad.	oz.	1

M. Sig. Local anaesthetic; (Not Hypodermic) Apply to gingivæ with brush or probang, before anaesthesia. A. C. Hewett.

The last I consider especially valuable as a local anaesthetic preparatory to systemic anaesthesias, to abort pericemental inflammations, relieve "lame" and "sore" teeth, ease all forms of odontodynea, heal apthous, follicular or parastic ulcers in stomatitis, and a local, in Rigg's disease in any and all its forms.

Some are afraid of so high a potency of cocain but I am not. I have given as high as ten drops (on sugar) every two hours in spasmodic and acute gastralgia. Relief followed but no untoward symptoms developed. Of course care must be exercised when given internally.

CHLOROFORM.

I shall not detain you long on this subject though from personal experiences I could keep you till tomorrow morning's sunbeams lighted up your beautiful bay and lake, the hills and valleys of this fertile region. I have written and published so much that what I have to say of it must necessarily be in repetition.

Two points however I wish to emphasize in relation to it.

First:—It is *the best* all around anaesthetic yet discovered.

A word or two as to Somnoform. I am here not to war on any form of anaesthetic, but I frankly say "It is a puzzle picture." Power it has undeniably. Merit it possesses, and even though deaths occurred from its earlier administration, fatalities of late have been rare if not entirely wanting. I am rejoiced at that fact. But as I have stood by the hour, watching its miracles of unconsciousness, I had a fear growing. Rapidity of unconsciousness, slight cyanosis, stertor of breath, congestion of surface blood vessels, slight spasmodic symptoms, and jactitation wake the ghost of a dread that like Banqus's will not down. I do not wish to decry it, but so long as my old staunch friend chloroform is within reach I'll not forsake it.

Second:—Chloroform can produce analgesia, robust and virile, seizing life forces with a grasp that primary shock cannot throw off, *if slowly and cautiously given at first.* That initial danger passed no other need be approached. The coach wheels of pain avoidance need not narrow its track to "An inch from margins crumbling." It can veer to where the road bed is "Rock-bottomed" and wide, and yet work out its mission.

I have striven to point out to dentists not only, but to surgeons the dangers of chloroform, that you may separate the food from the poison, the toxic from the nutrient. The safe plan is plain, easily learned. The dangerous one easily avoid. I will repeat.

Give chloroform slowly (mixed with much air for first three or four breaths, then as rapidly as permissable without the patient's coughing and strangling. When full analgesia is reached cease giving the anaesthetic, or only give enough to keep up that effect. Can anything be simpler? more explicit?

Now for a few words in discharge of what I have deemed a duty and I will release you.

AIROFORM.

When invited to give this address Mr. Bigelow, of the Ransom & Randolph Co., courteously intimated that I was not to over-do the praise of airoform (which by the way is chloroform improved.) Improved? Every word I have uttered of chloroform and its benisons can apply to airoform, and its benefactions can apply to airoform.

Chloroform as I have said before, at first a stimulant secondarily is ah eart depressant. Somebody, I do not know who, suggested alcohol. Happy suggestion. A stimulant from first to last, diffusive and patent, somebody, I do not know who, suggested nitrite of amyl. Again a happy thought. After the stimulus of chloroform ceases, and ebbs what better whip and spur to heart and lungs than nitrite of amyl? But chloroform with its biting pungency closes down capillary, arteriole and veinlet. Air is needed. The rush of the tiny globules of chloroform is to be stayed and the life sustaining oxygen in the air should be sent along as convoy. Safety is to be paramount.

Now comes Dr. Weisell, his head grizzled with cogitations of inventions, he studies out his triple valve for a cut off to the enemy chloroform in super preponderence and says "Let in air." He does it, attaches a dial measuring percentages. He says to chloroform's host, stay till I number you. He marshalls air, God's antidote to poisonous gases, and says advance, I give you human life in charge. The wonder of simplicity is in control. Accuracy, safety, efficiency is attained. Mankind is blessed.

Had I been provided with one of Dr. Weisell's inhalers, dream out if you can, what of guessing, and doubt, it had freed me from in the twenty thousand administrations of chloroform, at the birth of immortals, given in pain relieving of the middle aged, and mending of broken bodies of unfortunates of all ages.

To you dentists that hear me and surgeons if there are any present, I say to learn analgesia is simple, safe, easy. A brief light anaesthesia, not long continued, say, thirty to forty minutes, is not beyond attainment of any of you. But for one hour, an hour and three fourths of such anaesthesia as shall satisfy glory of the government craving surgeon, who requires that his patients shall not move, or contract a muscle, while he flourishingly cuts to vermiform appendix, to a runaway floating kidney, or hunts by salpingo-ster-o cyesis, for a stray fetus, stalled in the fallopian tube, then I say to you leave such anaesthesias to those who have become experts.

SUGGESTIONS

TO REMOVE RUST FROM INSTRUMENTS.

Pharmaceutische Centralblatt prints an effective process for removing rust from surgical instruments. The instruments are placed over night in a saturated solution of stannous chloride, which causes the spots to disappear by reduction. The articles are then rinsed in water, laid in a hot solution of soda soap, and dried. It is well to rub them with absolute alcohol and prepared chalk. Another convenient method for removing rust is to lay the instruments in kerosene. Paraffin oil is the best preservative against rust, and the most convenient way of applying it without getting an unnecessarily thick coating is as follows: One part of the oil is dissolved in 200 parts of benzine, and the objects, after being thoroughly dried and warm, are plunged into the solution. Instruments with joints, as scissors or needle-holders, are washed in the fluid, so as to cause it to penetrate into all crevices, and the benzine is then allowed to evaporate in a dry room.—*British Dental Journal.*

TO MAKE A TEMPORARY CROWN IN TEN MINUTES.

C. F. Graham.

In crowning anterior teeth you all have had cases when the patient objects to appear in public minus a tooth, even for a few hours, and on looking over your stock you find that you have nothing suitable for the case, or if so your time is so taken up you cannot give them proper attention.

You can solve the difficulty in a few minutes by selecting from your plate or rubber teeth one of proper size and shade; take a Davis post or make one of almost any convenient material (German silver will do nicely), and insert one end between the pins of the tooth and squeeze the pins together until they jam enough on the post to hold it in position; tack with soft solder by passing carefully through the flame of a Bunsen burner, and try in the mouth and adjust post; then pack Gilbert's stopping or other easily softened gutta-percha about post and palatine portion of tooth, and while soft press to place in the mouth, holding the crown firmly between thumb and forefinger in such a way that you force the gutta-percha about root of tooth, remove and trim away excess of gutta-percha, and set as an ordinary crown.

A temporary crown can be made in this way in a few minutes; the one I pass about was worn for several weeks.—*Dominion Dental Journal.*

TO CARRY A SMALL PORTION OF CEMENT.

W. R. Barnes, Chicago.

I was told once how to carry a very small portion of cement. Take a very delicate broach, and either make a little ring at the end of the broach, or bend the point at an angle of 45 degrees, or 90 degrees—just a little bend that you would almost have to take a magnifier to see—and you will find you can carry a little globule on the end of the broach. Otherwise it would tend to run back.—*Dental Review.*

ASEPTIC BROACH-HOLDER.

C. Boyd Powell, Jacksonville, Ill.

Take a spring tempered brass wire, size of wire B & S gauge No. 11, and drill a hole about one-half to three-fourths of an inch with a drill about the same size as the universal broach. Then cut off, making it three and one-half inches long. Take any barb broach, seizing it with a flat nose plier, and bend the shank about one-fourth of an inch at an angle of about 45 degrees and force it into the socket in the handle, and you have a broach-holder that will be a pleasure to use, as it is aseptic. Have the holders nickel-plated. Any size of wire that suits can be used. Take a No. 5 size brass wire and turn it down to a taper and have it milled and nickel-plated. The hole can be drilled for any size twist broach that is made; just flatten the butt end of any size broach with a hammer and make a diamond drill shape out of the broach and put it in a chuck and drill the socket; then bend the broach about one-fourth of an inch from the end at an angle of about 45 degrees and force it in with the pliers, and the friction will hold it secure. The broaches can be changed in these handles in two seconds, no nuts, screws or chucks about them to take up time.—*Dental Brief.*

CONVERTING GOLD SCRAP INTO PLATE.

G. E. Franke, Newton, Ill.

Having been in a number of dental offices during the past few years, I note that few have a rolling-mill, and have thought that a few words on the converting of gold scrap into plate would be acceptable. It is not necessary to have a furnace, for I do not want to consider gold scrap in large quantities. A melting of, say, five pennyweights is large enough for convenient handling. I presume you already have some kind of blow-pipe in use. Almost any kind with bellows will do the work. I am using Sam's gasoline outfit with fair results. I make particular mention of the gasoline blow-pipe because I think the major portion of country dentists have to rely upon it. I have also used the Brophy and Turner, and either will do the work. You can also make a generator by taking a Mason fruit-jar, breaking out the porcelain on the inside of the lid; have two brass tubes run through and soldered to the lid; allow one tube to extend to near the bottom of the jar, with the other only just inside; then you need buy only one blow-pipe, bellows, and tubing. This form of generator was recommended to me by a practitioner, and I know of one in use with good results; but personally I have never used one. I would caution one to select a good strong jar. You will be able to fuse pure gold in small quantities with these gasoline apparatuses. Then you must have a rolling-mill, which is almost an absolute necessity in any office where any gold work is done. In fact, one does not fully realize the benefit of it until one has it. By all means have the rolls. Then for the melting you need to sort the scrap carefully, cutting out and laying aside all pieces with any solder attached. All filings and pieces of solder should be sent to the refiner. Take clean gold scrap only for plate, for if any solder is in it, it will not roll well and has a tendency to crack. Then for the ingot mould I use a couple of carbon blocks. They measure two inches wide, one inch thick, and three and one-half inches long. They are furnished the jewellers by the wholesale jewelry supply houses. The dental depots can also furnish them. The advantage of these blocks over the ordinary charcoal lies in the fact that they have been chemically treated and do not spark—in fact, hardly burn—so a couple of blocks last quite a while.

Cut a groove the depth, width and length you wish your ingot to be, terminating at one end in a pit, in one of the blocks. See that the other block fits perfectly over this groove, leaving the pit exposed. Wire the two together. Be sure that the mould is perfectly dry previous to using. Melt your gold in the pit, tip up and run the gold into the mould. A little experience will enable you to turn out a handsome ingot. I find this kind of mould far superior to the asbestos or iron. You cannot use any borax with an asbestos mould, and I find that borax greatly facilitates the work, and the iron mould requires too much heat and makes too large and thick an ingot for the small rolls of a dental office.

In rolling gold *always* run the piece through the same way you start it. *Never* cross roll. Pure gold may stand a little of it, but alloyed will not. It will crack and ruin your plate. After rolling trim off the edges. You will find this method easily done and economical, saving you about 25 cents on each pennyweight; and not only that, but it enables you to make a nice piece of plate out of your scrap at a time when you may need it badly.—*Dental Brief.*

TO REMOVE A MORBID GROWTH OF GUM TISSUE FROM A CAVITY.

Frequently we have cases when a morbid growth of gum tissue fills, or partially fills, a cavity. Its removal is not only somewhat painful, but it is also a mean piece of work to cut it away on account of the excessive hemorrhage. In the majority of such cases it can be removed neatly and with dispatch, painlessly and bloodlessly, by ligating with a piece of silk to either the tooth with the cavity or the adjoining one, whichever is the most convenient. This cuts off the blood supply and reduces to a minimum the pain when cutting away the growth with a side motion of a small flat burnisher or other suitable instrument. If a bad case, touch with trichloracetic acid. For those who have not tried this method of removing this troublesome growth the result will be surprising.—*Dental Office and Laboratory.*

EDITORIAL

CAN A DENTIST BE JUDGED BY HIS SIGN?

Some time ago the following item appeared in one of the newspapers:

> "There is an itinerant dentist in Geneseo who wears a thousand teeth on his coat front, and who displays several thousand more in front of the hotel at which he puts up."

Without knowing this dentist, or even seeing him, one could readily guess what manner of man he is. His sign clearly indicates the destruction he has wrought, but no one will ever know the far-reaching ill effects of his wholesale slaughter on the physical well-being of his victims.

When you see the side of a building covered with large signs of some dentist, you do not feel that it is necessary to make inquiry as to what kind of a dentist he is. You instinctively put him down as a good man to avoid if you are seeking efficient dental services, knowing that, as a rule, the dentist who uses signs so large that "he who runs may read," is thinking more about the dollars he is getting from patients than the quality of service he is rendering, and you classify your man accordingly.

> "Tell me with whom thou art found, and
> I will tell thee who thou art,"

said Goethe.

As many young men are at this time graduating from the dental colleges and are about to locate, it might be well for them to give the subject of "signs" due consideration.

Look at the signs of the really prominent men in the dental profession; they do not extend across the side of a building nor hang between every window. Often only the name in the building directory is there to indicate the dentist's office, and the name neatly lettered on his office door to direct one to his reception room.

There are many, many dentists who need no sign at all, for their good work has insured a beaten path to their door wherever they may be. It is the quality of one's work rather than of his sign that brings the worthy and lasting patients.

A neat, unpretentious sign, an inviting, clean and tastily-furnished dental office stamps the owner as a painstaking dentist, and one worthy of your confidence.

Some years ago, Dr. W. W. Allport, now deceased, published an article on the subject, "My Search for a Dentist," and as it fits here so admirably, we will relate his experience as nearly as possible:

It was on the morning of a day in November that it pleased Heaven to rain upon me many monetary afflictions, and as a terrible episode to the weary attempt, it sent the toothache. One of my largest molars acknowledged an orifice, into which the smallest of all needles might have found its way to the nerve's home.

I remember to have "arranged" things somehow, given the necessary orders at my counting room that business might be transacted in my absence, particularly charged everybody for the hundredth time to "look out for "*breakers*," and started at a hurried pace, while my tooth jumped out the cadence of a quickstep, in search of a dentist. It was not a time to listen to recommendations. The indorsement of my friend or neighbor, who had been in successful business for a quarter of a century, would be questioned at bank. Guarantees went for nothing. Besides, everybody was borrowing money, and if I dared stop a man on such an errand, then and there to make an inquiry as to whether Dr. ——— could pull a tooth properly, or as to who was the dentist of his family, I should probably receive for answer, "Don't bother me about teeth, sir. Go to Cheatem, the banker, he'll take out your eye-teeth in a hurry."

And so I, a stranger to all the profession, went out in search of a dentist. From the streets in which bales or boxes were banged about all day by industrious draymen, I turned into one some two miles in length, a street on which dwelling houses (and a very limited number of retail shops) were builded, and severally occupied of course, by persons of very different degrees. As a general thing, over the few shops were offices —some of lawyers (they get in anywhere)—and some of so-called dentists, and some few rooms were devoted (so said the man at the foot of the stairs) to dressmaking and millinery purposes. I stopped at one of these stairways and read upon a large tin sign the words:

CALEB JONES,
DENTAL SURGEON.

Had this been all I might have been a customer of Mr. Jones, for I was in the mood to have something done, and speedily.

"Teeth extracted for 25 cents, and without pain." I took my foot from the stair—no responsible man, thought I, would either take out a tooth for 25 cents nor publish upon a sign that he would do so, naming a price, nor agree to remove the ivory without hurting like the mischief, unless, indeed, by application of ether, and certainly he could not adminster that for a quarter of a dollar. I went on—another staircase in another block. A huge case containing teeth of all sizes, placed upon gums of a lively redness, surmounted by a representative mouth of a colossus, even full of teeth, which opened and shut at equal intervals, being operated upon by mechanism within the thick walls of the case. "Not here," said I. "Punch stands at the door of the tobacconist and jollily points within." But a man who has a sacred charge, as a professional man has, of the very vitality of his patients, uses no lure and submits to no show of gross counterfeit. Farther on, over my head, swung a great three-pronged, gilded tooth, and just in front of the next house to it, across the sidewalk, suspended by two iron rods to the brick wall, a mammoth sign:

SMITH & BROWN,
SURGEON-DENTISTS,

in very large letters, gilt, upon a black, sanded ground.

Neither of these, I thought. The carpenter or stonemason may, with all propriety, by means of a board swung half across the alley, in which his little watch house for taking orders is located, inform the real estate owner of his tenant, that there Jacob Dojustice keeps his slate. But the man who handles dental, not building tools, who has studied "Rush Upon the Nerves," not "Potter on Mechanics," makes his announcement in no such manner.

Farther on, then, in my search for a dentist, a door plate, rather large, of glass instead of silver, told me that

C. TRUSTY, M. D.,
DENTIST,

lived or had an office within.

"Well, I will see Trusty," thought I, and I rang. The girl who came to the door was not trim and neat. I didn't like that. Doctor was busy; I would walk in—hat, coat—chair—and then "be with you in a moment, sir," from a nook in the corner. The curtains were in bad taste—yellow and then they were soiled. Where things are in bad taste in a doctor's house or a dentist's office, beware. "Now Doctor," says the patient in the chair, as Trusty turned from him to the case of instruments, "what do you recommend for filling?" "Well," says Trusty, "we consult the wishes of the patient; some we do with gold, and some with cement, you know, when they want a cheaper job."

I had a violent fit of coughing—must go to the door—did go—opened it and did not go back.

I didn't like the looks of things at first. I certainly did not like to hear a man in whom confidence was reposed dare to mention, without instant reflection, the cheapest mode of doing one of the most important deeds which challenges the best surgical skill in the world.

Besides, it is not for the patient, but for the dentist, to decide what is best to be done for the former. If a dentist be worthy of his position in the fraternity he will not be dictated to by the person for whose best interest he gives his time and talent.

Another door plate—this time of silver—very neat. No sign upon the house—a gentleman's residence. The tapestry within the front window, crimson, and the lace real. The servant tidy and civil, the doctor courteous, and—would, I take a seat, and if there is much to be done—will name a day. I don't know how it was. He was a stranger, but I had instant confidence. At any rate, he shall look at the tooth, and I sat down.

"The nerve is exposed. I can destroy it, and then fill the tooth. I cannot warrant it, however. The tooth will be a dead one, and may, and I shall hope it will last for many years. I will do my best to save it." I tried to make him promise to preserve it. He would not. He ran his little glass over all my teeth, pronounced them good, saw no other work to be done. He put something into the tooth. Afterwards, upon a day set, carefully cleansed and filled it. No pains were spared. I bite upon it now as I write, with a gusto. The great four-cornered fellow over it comes down with sledge-hammer power and covers the beautiful gold filling. Six years of constant service since it was filled, and now all right for six to come.

I found my dentist.

SOCIETY

LAKE ERIE DENTAL ASSOCIATION.

The annual meeting of the Lake Erie Dental association will be held at the Hotel Rider, Cambridge Springs, Pa., May 15, 16, 17, 1906.

Round trip excursion rates on all roads may be procured.

The committees are working hard to make this an extra fine meeting. All ethical dentists are cordially invited to attend.

V. H. McALPIN, Sec'y,
Warren, Pa.

NEBRASKA STATE DENTAL SOCIETY.

The thirtieth annual meeting of the Nebraska State Dental society will be held in Omaha, May 15, 16 and 17, 1906, at the Creighton Dental college. Dr. L. P. Haskell and Dr. J. N. MacDowell, both of Chicago, will be with us, and the indications are that we will have the best meeting in the history of the society. A cordial invitation is extended to all reputable practitioners to attend.

M. E. VANCE, Cor.-Sec'y.

VERMONT STATE DENTAL SOCIETY.

The thirtieth annual meeting of the Vermont State Dental society will be held in Brattleboro, Vt., May 16, 17 and 18, 1906.

It is expected that we will have the largest attendance of any meeting ever held by this society.

All the leading manufacturers have signified their intention of making an exhibit of their products, and this adds greatly to the success of a convention.

Every progressive dentist should be present.

Special social features for Thursday evening.

THOMAS MOUND, Sec'y,
Rutland, Vt.

SOUTHEAST KANSAS DENTAL ASSOCIATION.

The Southeast Kansas Dental association will meet in regular session in Pittsburg, Kans., July 9-10. A cordial invitation is extended to the profession.

W. T. EMBREE, Sec'y,
Pittsburg, Kans.

MISSOURI STATE DENTAL ASSOCIATION.

The forty-first annual meeting of the Missouri State Dental association will be held this year at Springfield, Mo., June 5-6-7 inclusive.

An unusually interesting program is being arranged. A number of men eminent in the profession have signified their intention of being present, and the meeting promises to be the best in the history of the association.

All ethical dentists are cordially invited to be present.

SAM T. BASSETT, Cor.-Sec'y.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of the National Association of Dental Faculties will be held in Atlanta, Ga., commencing at 2 p. m., Friday, September 14, 1906. The executive committee will meet at 10 a. m. on the same day.

H. B. TILESTON, Chairman Ex. Com.,
R. M. SANGER, Sec'y. Ex. Com.,
East Orange, N. J.

INDIANA STATE DENTAL ASSOCIATION.

The forty-eighth annual meeting of the Indiana State Dental association will be held at the West Baden & French Lick Springs, Indiana, June 26, 27 and 28, 1906.

The social side of this meeting will be a feature, while the papers and clinics have promise of being the best ever given at this society.

Ethical practitioners are invited to resort, recuperate and reillume with us.

R. A. ADAMS, Sec'y,
Clinton, Ind.

TENNESSEE STATE DENTAL ASSOCIATION.

The regular annual meeting of the Tennessee State Dental association will be held in Nashville, Tenn., May 15, 16 and 17.

CHAS. A. TAVEL, Sec'y.
Memphis, Tenn.

NEW JERSEY STATE BOARD OF REGISTRATION AND EXAMINATION.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual examination in Trenton, N. J., on the 9th, 10th, 11th, 12th, and 13th of July.

Practical and theoretical work all completed at that time.

Sessions begin promptly at 9 a. m. each day.

All applications must be in the hands of the secretary by July 1st.

For information kindly address the secretary,

CHARLES A. HEEKER, D. D. S.,
29 Fulton St., Newark, N. J.

MISSISSIPPI DENTAL ASSOCIATION.

The thirteenth annual meeting of the Mississippi Dental association will meet in Gulfport, June 6th, 7th and 8th.

All ethical practitioners of this and other states are cordially invited to attend. Every effort is being made to have this the largest and most profitable meeting ever held, and the pleasures of Gulfport, on the coast at this time of year, is a feature in itself.

Reduced hotel accommodations and the usual reduced rates on all railroads will be obtained.

For complete details address the secretary.

Yours truly,
E. DOUGLASS HOOD,
Sec'y Mississippi Dental Association.

THE GEORGIA STATE DENTAL SOCIETY.

The thirty-eighth annual meeting of the Georgia State Dental society will be held in Savannah, Ga., June the 19th, 20th, 21st, 1906. An excellent program of paper clinics is being prepared and we anticipate a most pleasant as well as profitable meeting. A cordial invitation is extended to all ethical members of the profession.

D. H. McNEILL, Cor.-Sec'y.
Athens, Ga.

SOUTH CAROLINA STATE DENTAL ASSOCIATION.

The annual meeting of the South Carolina State Dental association will be held in the City of Charleston, on the Isle of Palms, June 26, 27, 28 and 29.

We expect a very profitable and enjoyable meeting. A cordial invitation is extended to all ethical dentists.

EUSTON N. KIBLER, Cor.-Sec'y.

ANNUAL CLINIC ALUMNI ASSOCIATION, ST. LOUIS, DENTAL COLLEGE.

The annual clinic and class reunion of the Alumni Association of the St. Louis Dental college will be held in St. Louis, May 7th and 8th of this year. The various committees have been working energetically, each in its different line, and report that this will be the largest clinic given by the association. The committee on essays have a number of valuable and original papers. The committee on clinics have already secured 85 interesting clinics, and expect to have 100 the day of the clinic. The following are those who will give clinics and essays:

J. F. Austin, St. Louis; M. G. Atkinson, Havana, Ill.; E. M. Beall, St. Louis; A. D. Brix, St. Louis; W. E. Brown, St. Louis; R. O. Butts, St. Louis; L. O. Crall, St. Louis; W. M. Collins, St. Louis; G. M. Dempsey, Grafton, Ill.; R. F. Daniel, Fischer, Ill.; R. R. Edwards, Harrison, Ark.; W. Y. Eckardt, St. Louis; P. Finot, St. Louis; E. J. Garcia, St. Louis; W. F. Gerhardt, St. Louis; S. A. Houchen, Somner, Ill.; E. E. Armstrong, Cherry Vale, Kans.; J. Armstrong, Stonington, Ill.; T. G. Bradford, Dallas, Tex.; L. C. Burgard, Columbia, Tenn.; E. F. Boewe, West Salem, Ill.; J. K. Conroy, Belleville, Ill.; F. M. Cole, Cuba, Mo.; W. A. Clements, La Plata, Mo.; D. A. Donald, New Harmony, Ind.; P. E. Eckard, St. Louis; G. Elwanger, St. Charles, Mo.; T. A. Fulton, Charleston, Ill.; C. J. Frost, Warrensburg, Mo.; R. F. Graham, Oklahoma City, Okla.; W. A. Gardner, St. Louis; Oscar Hammer, St. Louis; R. B. Harvey, Goodland, Kans.; T. G. Hawley, St. Louis; W. A. Hopkinson, Olney, Ill.; A. H. Jones, St. Louis; G. M. Lark, Campbellhill, Ill.; F. W. Linnert, Warrenton, Mo.; J. L. McClean, St. Louis; C. M. McMahon, St. Louis; H. E. Menkhaus, St. Louis; G. H. Mathae, St. Louis; A. L. Marks, St. Louis; A. C. Minges, St. Louis; L. Mrazek, St. Louis; L. C. Mandell, St. Louis; R. H. Offill, Breese, Ill.; H. A. Rathburn, Marquette, Kans.; G. A. Ralston, Colby, Kans.; H. Rodemich, St. Louis; C. E. Rowe, Roodhouse, Ill.; J. Schuck, St. Louis; W. H. Shea, St. Louis; L. A. Stemmler, St. Louis; D. F. Sadler, St. Louis; G. H. Taggard, Conway, Mo.; W. D. Van Winkle, St. Louis; J. C. Weiser, St. Louis; R. L. Hesser, Louisiana, Mo.; Emmett E. Heflin, Shawnee, Okla.; N. N. Howard, Sedalia, Mo.; V. A. Kremar, St. Louis; C. F. Lawler, St. Louis; E. Z. Leibrock, St. Louis; R. H. McCormack, Manhattan, Kans.; A. G. MaGee, Louisiana, Mo.; G. W. Mason, Lebanon, Ill.; A. N. Martin, Lebanon, Mo.; D. E. Morrow, Dallas, Tex.; W. A. McKee, Thompsonville, Ill.; S. T. McMillin, St. Louis; H. S. Moser, New Franklin, Mo.; F. X. Ornick, St. Louis; L. F. Popp, Cape Girardeau, Mo.; J. C. Reader, East St. Louis, Ill.; B. L. Renfrow, Springfield, Ill.; W. E. Rose, Okawville, Ill.; H. B. Scarsdale, Waterloo, Ill.; A. F. Strange, Litchfield, Ill.; N. L. Swayze, Yazoo City, Miss.; E. B. Strange, Litchfield, Ill.; W. D. Tiller, Broken Arrow, Ind. Ty.; W. A. Wainwright, Winchester, Ill.; T. H. Walton, Highbee, Mo.; G. R. Williams, St. Louis; R. H

Woods, Queen City, Mo.; F. Westerfeld, St. Charles, Mo.; G. B. Winter, St. Louis, Mo.; E. A. Walker, Marisia, Ill.; W. A. Weise, St. Louis; F. W. Wiseman, St. Louis.

OSCAR HAMMER, President.
R. O. BUTTS, Secretary.

INTERSTATE DENTAL FRATERNITY.

The annual meeting of the Interstate Dental Fraternity will be held at the New Kimball house, Atlanta, Ga., on Monday, September 7, 1906.

The meeting and banquet will be in charge of Dr. Frank Holland, the vice-president for Georgia. Dr. Holland's well-established reputation as a host is a sufficient guarantee for a royal good time for all the fraternity who can arange to get there. Do not miss it.

R. M. SANGER,
National Secretary.

INDIANA STATE BOARD OF DENTAL EXAMINERS.

The Indiana State Board of Dental Examiners will hold its next meeting in the Capitol building at Indianapolis, beginning at 9 o'clock, Tuesday, June 12th. All applications for registrations in this state will be examined at this time. Applications must be in the hands of the secretary not less than five days prior to above date. For further information apply to the secretary.

F. R. HENSHAW,
Middletown, Ind.

OHIO STATE BOARD OF DENTAL EXAMINERS.

The regular semi-annual meeting of the Board of Dental Examiners of the State of Ohio will be held in Columbus, June 26, 27, and 28, 1906.

Only graduates are eligible to examination.

Application, accompanied by fee ($20.00) should be filed with the secrétary by June 16th. For further information address

H. C. BROWN, Sec'y,
185 East State St., Columbus, O.

ARKANSAS STATE DENTAL ASSOCIATION.

The Arkansas State Dental association meets, May 9-10, at Fort Smith, Ark.; also the State Board of Dental Examiners meets, May 7-8.

KENTUCKY STATE DENTAL ASSOCIATION.

The time and place for the next annual meeting of the Kentucky State Dental association has been changed to Louisville, Ky., during "Home-Coming Week," June 12, 13 and 14. Special railroad rates of one fare for round trip can be obtained.

All former residents of Kentucky in the profession are especially invited and their presence solicited.

A cordial invitation is extended to the profession.

W. H. RANDALL, Sec'y.,
Louisville, Ky.

ALUMNI ASSOCIATION OF THE DENTAL DEPARTMENT OF WASHINGTON UNIVERSITY.

The Alumni Association of the Dental Department of Washington University (Missouri Dental college) will hold their annual clinic in the college building, Twenty-seventh and Locust streets, on Tuesday, May 22, 1906.

Address all communications to Dr. F. B. Lynott, 'Frisco Bldg., St. Louis, Mo.

DR. B. N. PIPPIN, Pres.
DR. F. B. LYNOTT, Sec.

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of Pennsylvania will conduct examinations in Philadelphia and Pittsburg, June 5, 8, 1906.

For papers and particulars, address

DR. N. C. SCHAEFFER, Sec'y Dental Council,
Harrisburg, Pa.

VERMONT BOARD OF DENTAL EXAMINERS.

The next meeting of the Vermont Board of Dental Examiners, for the examination of candidates to practice dentistry, will be held at Montpelier, July 10, 11, and 12, 1906, commencing at 2 p. m. on, the 10th. Headquarters will be at the Pavilion hotel.

Applications, together with the fee of $25, must positively be in the hands of the secretary before July 1st.

Candidates for third examinations must notify the secretary before July 1st, enclosing the fee, $5. Application, and other blanks required, can be had by writing the secretary.

GEO. F. CHENEY, Sec'y.,
St. Johnsbury, Vt.

AFTERMATH

PERSONAL AND MISCELLANY

Married.—Dr. George Freeman, Britton, S. D., was married, February 27th, to Miss Maude Herrick.

Change of Location.—Dr. J. A. Libbey, Pittsburgh, Pa., is now located in the Fulton building, Sixth street and Duquesne Way.

Traveling Dentists Are Numerous.—A North Dakota paper states that it is astonishing what a number of traveling dentists there are in the state.

Moved to Texas.—Dr. J. P. Reardon, formerly of Lawrence, Mass., has removed to Texas, where he will locate for the benefit of his health.

Dentist Indicted for Murder.—Dr. James W. Simpson, of New York, was indicted by the grand jury, March 8, for the murder of his wife's father last December.

Boise (Idaho) Odontographic Society.—The officers elected were: Dr. A. W. Cate, president; Dr. W. C. Minier, vice-president, and Dr. R. J. Cruse, secretary and treasurer.

Memphis (Tenn.) Society.—Dr. C. J. Washington was elected president, Dr. W. M. Slack, vice-president, and Dr. Eugene Johnson, of Collierville, Tenn., secretary and treasurer.

Fargo, (N. D.,) District Dental Society.—Officers elected at the annual meeting are: President, L. C. Davenport; vice-president, J. L. Graves; secretary, F. K. Weible; treasurer, C. L. Rose; executive committee, F. H. Bricker, Ed. Christiansen and W. E. Heller.

Dr. Harry Kahlo Married.—On Wednesday evening, April 18th, Dr. Harry C. Kahlo, Indianapolis, Ind., was married to Miss Ethel Frances Havens of the same city. We extend hearty congratulations and best wishes.

Dental Examiners Enforce the Law. —The Minnesota State Board of Dental Examiners are after all dentists practicing without a license. The offenders will soon learn that the board means business and will see that the law is enforced.

May Honor Pioneer.—The Hartford (Conn.) Dental Society will probably erect a memorial tablet next year to mark the birthplace of Dr. Horace H. Hayden, of Neuson, who played a great part in building up the profession in the early part of the nineteenth century.

Chattanooga (Tenn.) Dental Society Organized.—About 20 dentists have become members. The officers are as follows: Dr. R. S. Henry, president; Dr. C. H. Smith, vice-president; Dr. F. W. Meacham, treasurer; Dr. B. C. Roper, secretary; Dr. V. Taylor, chairman of executive committee.

Mr. H. Q. Altenberg, so long connected with the Ransom & Randolph Co., has severed his connection with them to join the Marshall Dental Mfg. Co., of Des Moines, Iowa, as a member of that company. Mr. Altenberg leaves with the best of wishes of the Ransom & Randolph Co. and his many friends.

Dr. Haskell a Guest.—Dr. L. P. Haskell, of Chicago, was a guest of the State Dental College of Dallas, during its annual clinic, March 23d and 24th; he lectured and demonstrated to the students of the college, and also to a large number of dentists. One of his demonstrations was a practical case of continuous gum.

Burglaries.—Dr. C. L. Strailey, of Williamsport, Pa., was robbed of two vests, March 25, while he was absent from his office. A coat was taken in a similar manner last summer. Nearly every dental office in Shreveport, La., was entered, March 12, by what is thought to have been a gang of professional burglars. About $200 worth of gold was taken from the various offices.

Dentist Has Narrow Escape.—Dr. Eugene E. Holmes, of Minneapolis, Minn. had a narrow escape from death, March 2d. His assistant had placed bichloride of mercury in a drinking glass to make an antiseptic, and Dr. Holmes, not noticing the act, filled the glass with water and drank a large quantity. Realizing what he had done, he rushed for a drug store, where antidotes were administered and he was relieved.

Dental Surgeons for the Navy.—The house committee on naval affairs decided March 9 to report favorably the Cousins bill authorizing the appointment of not more than 30 dental surgeons in the navy, and the Roberts bill to reorganize the naval nospital corps.

The Roberts bill provides for chief pharmacists, pharmacists, pharmacists' mates of the first and second class, and hospital apprentices.

Doctors and Dentists Unite.—The physicians and dentists of Humboldt, Tenn., have formed an organization for the purpose of deriving mutual benefit by the study and discussion of the various branches connected with their professions. Dr. J. H. Preston, president; Dr. B. S. Penn, vice-president, and Dr. J. H. Meeks, secretary. It was decided to reorganize the Humboldt Medical society, with an amendment to the constitution of said society, providing for the membership of graduates in dentistry.

Deaths.—Dr. Horace French Bryant, of Boone, Ia., died, March 10th, of acute indigestion, followed by typhoid fever. Dr. J. M. Blythe, of Decatur, Ill., died March 11th, of stomach trouble, aged 64. Dr. Adolphus E. Fones, of East Bridgeport, Conn., died, March 9th, of a complication of diseases, aged 64 years. Eugene Doherty, of Williamsburg, N. Y., a manufacturer of dental rubber, died, March 14th, aged 68 years. Dr. Ellis Dixon, of Frankfort, Ind., committed suicide by shooting himself, March 15th.

Miami Valley Dental Society Organized.—The dentists of Dayton, O., organized on Monday, April 2d, in the Phillips house—the "Miami Valley Dental society," and we meet every first Monday of each month. Dentists from all of the surrounding towns are admitted to membership. Officers elected: President, Dr. P. S. Bollinger; vice-president, Dr. E. T. Tissard; secretary, Dr. W. L. Wright; treasurer, Dr. L. C. Adams; corresponding secretary, Dr. M. C. Saul. Committee on arrangements—Drs. Billow, Blanchard, Zell. Committee on ethics—Drs. Penfield, Schoff, and Glew. Committee on membership—Drs. Stewart, Flory, Hubbard.

M. C. SAUL, Cor.-Sec'y.
Arcade Building.

Ethyl-Chloride Considered Dangerous as an Anaesthetic.—The administration of anaesthetics in dental surgery was the subject dealt with in an interesting paper read at one of the leading London medical societies a short time ago.

In view of a recent tragedy in a London dental surgery, the information which the paper gave regarding the use of ethyl-chloride has a peculiar interest. It was shown that this drug, which has been used rather freely within the last three years, is more dangerous than many people imagine. Investigations show that after momentary stimulation a marked fall of the blood pressure occurs in the human subject. It was urged that this drug should never be used.

In the case of the aged or any person suffering from cardiac trouble, the use of too strong a vapor at once is trongly condemned. Oxygen and nitrous oxide gas seems to be about as reliable as any of the anaesthetics in dental practice, unless, perhaps, in the case of children.

First Annual Meeting National Association of Dental Salesmen.—The first annual meeting of the National Association of Dental Salesmen was held coincident with the big manufacturers' and dealers' meeting at the Auditorium, March 26 to 30, 1906. The object of the association is co-operation and exchange of ideas among the salesmen for the good of all concerned; making the competition by fraternalism among the members, friendly, even if keen; and ever holding to the eyes of all the ideal of doing business as a clever man of sense, character and honesty would do it, always giving and always expecting a square deal from his competitor. Paper by Mr. C. A. Sykes, president American Dental Trade association, on "The Dental Trade-Manufacturer-Salesman-Dentist," was read, and addresses by Mr. Frank Marimon on "Commercial Ambassadors," and Mr. W. C. Holmin, on "Salesmanship," were heard and discussed. The following officers were elected for the ensuing year: C. A. C. Kelley, president, Buffalo, N. Y.; Oscar Beig, vice-president, Philadelphia, Pa.; H. J. Bosworth, treasurer, Chicago, Ill.; Judson Stackhouse, secretary, Buffalo, N. Y. The following were elected as vice-presidents to represent the association in their different sections: C. N. Bowe, Chicago, Ill.; Wm. Doeloff, Boston, Mass.; H. Q. Altenberg, Des Moines, Iowa; H. A. Callis, Norfolk, Va.; L. H. Herman, Brooklyn, N. Y.; Dr. O. B. Price, Moncton, N. B., Canada.

Functions of State Dental Boards Are But Supervisory.—Functions of the state dentral board are purely supervisory in power to protect the general public and the board is denied the right to interfere with the curriculum of any school according to the opinion of the state supreme court in the detailed dental decision just received in Milwaukee covering the case in point between the state board and the dental department of the Milwaukee Medical College. The opinion and decision favoring the college in its recent contentions is exhaustive, and copies of it are being asked for by members of other state boards who are interested. The decision is a far-reaching one, and is particularly interesting because it is the first instance in the United States where a supreme court has defined the functions and offices of a state board.

In ordering the Milwaukee Medical school to issue diplomas to the six students who had been denied such at the instance of the state board, the supreme court held that "the system of legislative control under consideration was not designed to enable a licensing board to interfere with the mere business management of dental colleges by making laws regarding their charges for instruction, and their treatment of students in respect to their schedule of fees. The power conferred was limited to reasonable protection of the public against danger of incompetent practitioners securing patronage, and is wholly of an administrative character. The justice held that it was not the public's business whether a school maintained its fees up to a certain standard, as was charged against the Milwaukee Medical.—Manitowoc (Wis.) Herald.

Report of Dental Commission of Connecticut.—In the report of the state board of Connecticut, to the governor, they had the following to say regarding examinations: "The standard of the National Board of Dental Examiners has been maintained, the general average of 80 per cent. in the practical, and 75 per cent. in the theoretical, being required in examinations. During the year one examination was held in the theoretical branch at the Capitol, on June 9 and 10, 1905, and in the practical branch at Putnam Phalanx armory, June 8, 1905. There were 36 candidates. Of the 36 who were allowed to proceed with their examination, two failed to appear, and two failed to secure 80 per cent. or over in their practical examination, and were, therefore, excused from the theoretical examination. Thirty-two were accepted and allowed to proceed with the theoretical examination; of these 10 failed to secure the required average and were rejected, and 22 were accepted and granted licenses." The board is after offenders against the law, as indicated by the following: "The board of dental commissioners, though chiefly an examining board, have taken it upon themselves to assist the county health officers throughout the state in the proper enforcement of our dental law. In order that the standard of our profession may be maintained and the public protected against incompetency, it becomes the duty of every licensed or registered practitioner to report by letter to the nearest dental commissioner any violation of the law that he knows to exist. The dental commissioners will in turn present the case to the county health officer in the county where the violation occurs, so that he may investigate, and, if necessary prosecute the case." The report contains lists of registered and licensed dentists entitled to practice in the state, deceased licentiates and colleges accepting the standards of the National Association of Dental Examiners. The dental laws of the state also form a part of the report.

Recent Patents of Interest to Dentists:

811370—Dental can, Wm. Brush, Weehawken, N. J.
812328—Dental matrix, Wm. Crenshaw, Atlanta, Ga.
810712—Artificial denture, John M. Card, Olean, N. Y.
810713—Artificial denture, John M. Card, Olean, N. Y.
810842—Artificial denture, John M. Card, Olean, N. Y.
815153—Dental tool, Charles P. Fritz, Philadelphia, Pa.
814235—Toothbrush, Moses Rosenstein, Medford, Mass.
810954—Toothpick holder, Wilhelm Loewen, Glatz, Germany.
811848—Dental clamp, Edson L. Hutchinson, Honolulu, Hawaii.
810611—Dental obtunder, Wesley F. Blasingame, Moultrie, Ga.
811849—Teeth separator, Edson L. Hutchinson, Honolulu, Hawaii.
811479—Dental compress, Nathan L. Burke, Benton Harbor, Mich.
812567—Dental instrument holder, James W. Ivory, Philadelphia, Pa.

811442—Dental and surgical lamp, Clarence F. Rodgers, Conneaut, O.

812395—Portable dental furnace, Frederick S. Belyea, Brookline, Mass.

814056—Dental-matrix retainer, Closson M. Leffingwell, Little Falls, Minn.

814925—Gold-catcher for fountain spittoons, Frank E. Webster, Buffalo, N. Y.

815040—Instrument for stopping teeth, Percy F. Rutterford, London, England.

815041—Instrument for stopping teeth, Percy F. Rutterford, London, England.

812976—Dental tools for removing crown-pins, George T. Carpenter, Chicago, Ill.

811806—Mirror for surgical, dental, and the like uses, Robert Walker, Newark, N. J.

811864—Dental and surgical obtunder, Wm. L. Moore and E. L. Hutchinson, Honolulu, Hawaii.

812895—Cutter for cutting toothpicks from veneer strips, George P. Stanley, Dixfield, Me.

813178—Slip-joint connection for dental handpieces, Edward E. Smith and H. F. Jones, Philadelphia, Pa.

813348—Grinding stone and disk employed in mechanical and operative dentistry, Harry Sanford-Burton, Oxford, England.

Copies of above patents may be obtained for 10 cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

ORTHODONTIA—EARLY AGE FOR CORRECTION.

BY T. J. BRADFORD, D. D. S., DALLAS, TEX.

Professor of Orthodontia and Dental Anatomy in the State Dental College, Dallas, Texas.

Nature is always true, and the laws of heredity in human nature the same today as yesterday. In studying orthodontia we have been looking for causes and then assist in the cure by removing the cause. If we go to the vegetable world, we will find how perfectly nature does her work; you may search all the year for an ear of corn that has an odd row on it, but you cannot find it; you may find a mixture of kinds of corn, owing to the union of two separate kinds, but the law that the rows should be even is not broken.

The law of human nature demands that man should have 52 teeth during his life, provided, of course, he lives to full, mature age. The unbreakable law is, there should be 20 of these teeth called deciduous teeth erupted by the time a child is about two years old, and that between six and 12 there are larger ones being erupted and added to these 20, and from that time they begin to replace the first ones. The law further holds that the jaws into which they are set should comprise two arches, the lower just enough smaller than the upper that the upper teeth overlap the lowers on their labial and buccal surfaces, and the interlocking of the teeth begins at the cuspids extending backward.

This is our foundation for our argument for early correction; that we may assist the growth of nature to reach the right proportion so that the teeth may have the relative position intended by the natural laws. Just as soon as it is manifest that there will be a malocclusion of the teeth it is best to take the teeth in hand for correction. The six-year molars are always indicated for anchorage, and it is the early loss of these teeth that causes more trouble than the loss of any other. Parents as a rule do not know that these are permanent teeth, and suffer them to decay. I think that the eruption of the six-year molars should be taught in the public schools of this country. To the dentist who says, "Wait till all the teeth erupt," I will say that a greater mistake was never made. Don't wait, but take the case as soon as possible. Now, there are many reasons why a case should be started early; first, above all, the cartilaginous condition of the alveolar process in which, when pressure is applied, there is a bending of the alveolar process, as well as the destruction of the tissue, against which pressure is applied, by the osteoclast cells, and a deposition of bone tissue by the osteoblasts. There is no pain, in fact there is no pain in any condition if properly handled, to the patient at so early an age; the sockets for the teeth at this age are very large and often there is no septum of bone between the alveoli; besides, the peridental membrane is much thicker than with age. The retaining appliances will not have to be worn so long, nor will the patient be so sensitive about the looks of the appliance as one who is much older.

The most difficult cases an orthodontist has to contend with are those where some dentist has extracted one or more of the permanent teeth. Modern orthodontia teaches that there is never a condition in which any of the six anterior teeth or the molars should be extracted at any age. In the cases that I have on hand for correction, where some of the permanent teeth have been extracted by dentists, there is not a single one of them that helped the case one iota, but the cases were so mutilated that perfect results could not be attained unless the extracted teeth were replaced by prosthetic means.

Another reason for an early correction of the case is that it is much easier to guide a tooth in its proper position while it is erupting than to move it after it has taken an abnormal, stable position in the arch. If one of the upper centrals were erupting in lingual occlusion it would require but little force to move it labially so that it would take its normal position; whereas, had it taken a malposition of lingual occlusion, not only would that central have to be moved labially, but the other central and lateral would have to be moved also to make room for its movement, since the teeth always tend to proximate. In the eruption of the permanent teeth they look as though they would take a malposition, but no uneasiness should be felt if they are within their inclined planes. The interlocking of the teeth and the proximal contact is nature's way of retaining them, and permanency of results cannot be hoped for unless normal occlusion or an improved occlusion is established.

If the bicuspids strike end to end, or if the points of the cusps of the lower bicuspids occlude with the center of the upper bicuspids it will only be a very short while till they will move either to the mesial or distal. It would require very little movement to move the upper bicuspids distally the smallest fraction of an inch at the age of 10 years, and then perfect normal occlusion would be established, but were these teeth left alone, the upper teeth would move mesially and make a distal occlusion and force every tooth into malocclusion.

All conditions of this kind are favorable for the transition of the complete distal occlusion on account of the mesial inclination of all the teeth in the upper arch. It is very essential that the roots of the teeth and their position should be known; the thickness of the alveolar process, as well as the perfect normal occlusion. Still another reason for the early correction of the case is that nature is putting forth all her efforts. The building up of the tissues is very much greater in extreme youth than at any other time, and then very slight pressure is needed to move a tooth or guide it into its proper position; whereas, if the operation be deferred until all the teeth have erupted, the teeth will be firmly fixed in their malpositions, the facial lines will be badly marred, and the lips over-developed from excessive use, or undeveloped from lack of use, as the case may be. "Nature has never yet corrected a deformity unaided," but with the assistance of nature, it is wonderful what results can be obtained.

All conditions of malocclusion are brought about between the ages of 7 and 12 years of age, generally, and if these cases are handled properly between these ages, there is no question of a doubt but that normal occlusion can be established, and perfect results obtained. In youth the habits of mouth-breathing, thumb-sucking, lip-biting, etc., are formed, and if these habits are to be overcome before they have done their injury to the patient, they must be eradicated at an early age.

It is wonderful that such harm results in these pernicious habits; if they are not overcome or the cause removed, retention will not be successful, even if normal occlusion is established. These habits are easily broken up if the proper attention and care is paid the child by parent when they are first formed. Some of the most difficult cases in orthodontia to be corrected are those cases that have been caused by habits; later I will submit a paper on habits and their influences.

When, from some cause, nature has not absorbed the root of a temporary tooth and its stable position causes a deflection of the permanent tooth when it erupts, or on account of this non-absorption of its root, it acts as a block to the eruption of its successor. We can readily see that if the child were in competent hands at an early age, and the temporary tooth had been extracted at the proper time, nature would have completed her task of normal contact. The skiagraph is an excellent medium by which we can ascertain the position of the permanent tooth if its eruption is impeded by the temporary tooth not having its root absorbed.

All of us are cognizant of the principle of migration of the teeth, and if a temporary tooth is lost prematurely through decay, the teeth that are mesial and distal to this tooth will migrate till they completely fill the space, or partially so at least. In youth, on account of the cartilaginous condition of the jaw, and the lack of the interlocking of the temporary molars as found in the permanent bicuspids, the migration of teeth is much greater. With this migration there will be no room for the eruption of the permanent tooth, and it will either erupt in a malocclusion or remain imbedded in the alveolar process, and can only erupt with assistance.

How easy it would have been to have maintained this space by banding the tooth both mesially and distally, and soldering a piece of spur wire to each band the proper length, to have maintained the space until the permanent tooth could have erupted. Or, a better way, as given by Dr. Angle, to drill a small cavity in each of the mesial and distal surfaces of the proximating teeth and place a stiff wire and then pinch the wire to lengthen it so that it will fit tight, remain, and hold the space.

Don't extract any temporary tooth unless you know that its succedaneous tooth is in its place; don't attempt to correct a case by extraction; extraction is not indicated in but very few cases, and it is governed by the age of the patient.

PRACTICAL HINTS.

BY E. T. LOEFFLER, D. D. S., ANN ARBOR, MICHIGAN.

Professor of Dental Therapeutics, Dental Department, University of Michigan.

IMMEDIATE ROOT-FILLING SHOULD NOT BE RESORTED TO IN CASE THE PULP IS REMOVED BY PRESSURE ANAESTHESIA.

Two to five days should be allowed for a restoration of the equilibrium of the circulation in the surrounding tissues, especially the peridental membrane. An antiseptic dressing in the root canal will take care of any secondary hemorrhage or serum that may come in through the apical foramen. In case the canal is filled immediately the secondary hemorrhage due to the reaction causes an undue pressure in the apical space, and is liable to set up an active inflammation or congestion of the peridental membrane, and if septic conditions are present will lead to an inflammation. About 30% of the cases treated by this method in our clinics show symptoms of hyperaemia in spite of the fact that we follow out the above rule. It is our candid opinion that many teeth are lost or suffer from blind abscess where the above instructions are not rigidly adhered to. When pressure anaesthesia of any sort is resorted to in the removal of pulps every possible antiseptic precaution ought to be taken to avoid forcing septic matter into the apical space.

A VERY EFFICIENT METHOD FOR ANAESTHETIZING THE PULP WITHOUT THE USE OF THE PRESSURE SYRINGE.

Prepare the cavity in the usual way. Place a saturated pledget of cotton with cocaine solution directly over the pulp and fill the remainder of the cavity with a piece of vulcanite. Then take a short piece of orange wood, fit it into the cavity as prepared and direct the patient to bite down upon this with increasing force. In this way we can obtain a well-directed regulated force or pressure and with less discomfort to the patient and operator.

In our daily clinics we have succeeded in anaesthetizing pulps by this method, after repeated attempts by other means have failed.

REGULAR CONTRIBUTIONS

THE TECHNIQUE OF MAKING A PORCELAIN INLAY.*

BY G. F. WOODBURY, D. D. S., CLEVELAND, OHIO.

I have tried to make this paper practical, and have gone into details that the experienced porcelain worker may consider unessential; but this paper is for the inexperienced operator—the beginner—especially for the one that has not begun, and I have labored to make plain the steps in the construction of a porcelain inlay.

The illustrations used are crude, but they are employed to make the text clear. I make no claims to originality, but present the subject as I practice it in my office. Many things have not been touched on that have an important bearing on porcelain inlays, because they do not directly relate to the subject presented in this paper. The various methods used for the same purpose have been ignored, because, for me, the ones presented are the most satisfactory. The presentation of other methods are left to those taking part in the discussion.

In making a porcelain inlay it cannot be said, as it is of a gold filling, that when the cavity has been properly prepared that the foundation is laid for a successful operation. While the cavity form has much to do with the success of a porcelain inlay, it is not the most important part. Indeed, it is impossible to say which is the most important part of the operation. Essential as the formation of the cavity is, I do not deem it necessary to take the time to go into the detail of its construction, because last month Dr. Kenyon gave you the cardinal points in cavity preparation for porcelain inlays**, which I approve and follow, except in a few minor details. But before dismissing the subject of cavity preparation, I wish to lay before you this fact: Porcelain has not come to stay, if you depend on the cement to keep it in the cavity; the cavity must have a broad, well-defined seat, not for the convenience of guiding the inlay to place when cementing it in, but for the purpose of providing adequate resistance against the stress of mastication. (Fig. 1).

---

*Read before the Cleveland Dental Society, February, 1906.

**Dr. Kenyon's article appeared in February, 1906, number of The Dental Summary.—Ed.

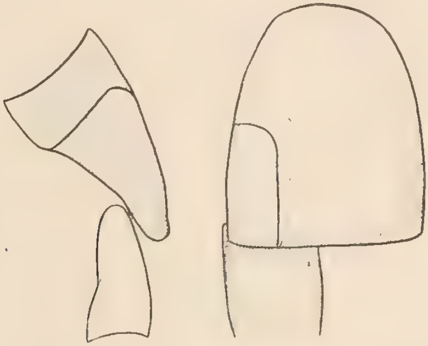


Fig. 1

Nor will it be to our advantage at this time to discuss in any way the relative values of high and low fusing porcelain, the use of the pyrometer or where porcelain is indicated, but confine ourselves wholly to the technique of making a porcelain inlay.

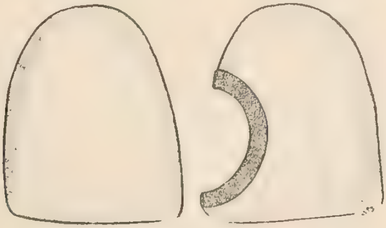


Fig. 2

If we are to consider consecutively the technique of the operation we must take as the first step the matter of separation. If you think it requires more space for the placing of a porcelain inlay than for the insertion of a gold filling, you are in error, for it is only necessary to have the platinum extend over the labial surface (if the inlay is to be inserted from the lingual side) the width of the space between the teeth; all that is required is to have the matrix extend beyond the edge of the cavity, so as to have a well-defined margin. But if it is a cavity involving the incisal surface, the matrix can have wider margins, although it is not necessary. (Fig. 2).

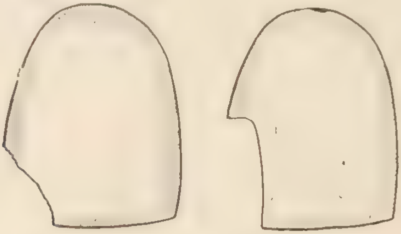


Fig. 3

That we may get a better understanding of how to construct an inlay let us consider a definite cavity, one involving the approximal and incisal surfaces of an upper central incisor. (Fig. 3.).

TAKING THE IMPRESSION.

Having gained sufficient space and prepared the cavity, the next step is to obtain an impression, for I am convinced, after repeated failures to procure a good matrix, that it is necessary to have a cement impression of the cavity, not for the purpose of swedging the matrix, but for the convenience of roughly shaping the platinum to the cavity-outline. To obtain this cement impression, I place a napkin in the mouth so as to exclude the moisture, wipe out the cavity with cotton, mix the cement quite thick, take it between the thumb and fingers and make it into a ball, then roll it in talcum powder to prevent it adhering to the cavity walls. It is now carried to the tooth and worked into the cavity. When the cement is hard, trim away the excess on the labial portion to the margin of the cavity. Then, with a little pressure, the impression will be easily removed. For the convenience of holding the impression it is fastened to a piece of modeling compound. Now place a piece of platinum over the impression and a piece of wet spunk over this, and with a suitable instrument work it down till it gives a fair outline. (Fig. 4),

I am sure you will readily see the advantage of the impression; and you must acknowledge that it is easier to form the platinum over a rounded surface than it is to force it into a hole. It takes time, however, to do this, but in the end it saves time, prevents punctures, eliminates expletives, and enables you to get a better matrix, because there are fewer folds to burnish out. And when the cavity extends to the gum-margin at the gingivae, you can trim and bend your matrix so it will readily slip under the gum.

OBTAINING THE MATRIX.

We now take up the most difficult part of the operation—to obtain an accurate matrix. You must be equipped with suitable instruments and fortified with an abundance of patience. After your matrix has been outlined on your cement impression, place it in the cavity, working it to place as near as possible; then use small pieces of wet spunk, filling the matrix, and with a suitable instrument force to place. When it is firmly seated, the edges of platinum can be pressed down with the finger or a burnisher. Now remove the spunk, and if the matrix is well in place, put a piece of linen tape wide enough to entirely cover it, and burnish your margins. If your cavity has been formed with its walls at right angles to each other, it will be necessary to have an instrument that will adapt the platinum to these angles. (Fig. 5). For this purpose I made some instruments, the only original thing I have to present except the use of the tape for forcing the inlay to place when cementing it in. This will be spoken of later.

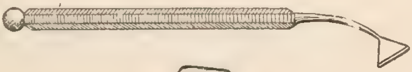


Fig. 5

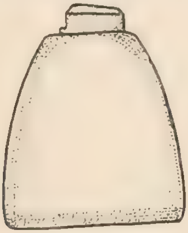


Fig. 4

The instruments are made by soldering a piece of pure gold to an old excavator handle, suitably bent, and shaped as you find it necessary. The ones used in adapting the matrix to the angles are inverted pyramid shape. Hold the matrix in place by a burnisher and use an inverted pyramid instrument to press the platinum into the seat and labial resistance groove. The matrix may be removed and annealed, preferably in the furnace, before the last burnishing. When the matrix is as good as you think you can get it, take a piece of gum camphor a little larger than the cavity, and force it into the matrix and burnish toward the margins, using considerable pressure. You can now use no little force to dislodge the matrix without distorting it. Having removed the matrix with the gum-camphor in it, place it on anything that will support it (I use an inverted glass salt dish), place a drop of alcohol on the camphor and touch a lighted match to it. In a few seconds all trace of the camphor is gone and your matrix is clean and bright. If any blood has got on the matrix there will be a black stain left, but do not try to remove this—it will disappear with the first baking and not injure the inlay.

SELECTION OF SHADES.

We have now come to the part in the operation that requires an artist's eye, aided by a good light—the selection of shades. It is important to make the selections before placing the rubber-dam, if you use it, while preparing the cavity. It is necessary to use two, and sometimes three, shades in such cases as we have selected. First, draw a diagram of the tooth. (Fig. 6). Now take your shade guide and select the shade at the upper portion of the cavity; it is B; mark this on your diagram. Now determine how far this shade extends, and draw a line on your chart. Follow this plan until you have completed the selections. Dentin is almost always a shade of yellow; determine whether this is light or dark, and note this on your chart also.

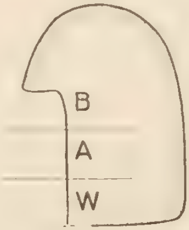


Fig. 6

We are now ready for the furnace. Opaque lining is used in the first baking. This "lining" is very high fusing and serves two purposes: one to control the shadow and the other to keep the matrix from warping. Hold the matrix with suitable lock-pliers, taking hold of it where it will be least liable to bend, and place the lining in the matrix; absorb the excess moisture with white blotting paper. Jar the pliers to settle the body into the matrix. Do not allow the porcelain to come to the margins. We are now ready for the first baking. If there is a puncture in the matrix there will be no harm unless it is on the margin, then it will be best to get a new matrix. Do not place anything over the opening—the "lining" will not go through. Cut the porcelain where there is much bulk, to prevent it drawing the matrix when the porcelain shrinks in baking.

BAKING.

In baking the inlay I consider it necessary to rest the matrix on a bed of powdered silex instead of on a bare slab. This is a reasonable conclusion because it is better to have the entire surface of the matrix supported than to have it rest on two or three points. This will prevent any change in the matrix when the platinum is at an intense heat and the bulk of porcelain weighing down. This is, I consider, an indispensable precaution if you want good margins.

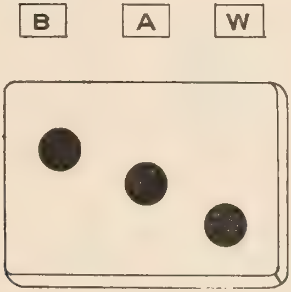


Fig. 7

It is not necessary to replace the matrix in the cavity and burnish after first or subsequent bakings. The lining body should be baked to a full glaze. Next the foundation body is added; build it out so as to reproduce the dentin. Fuse this to a slight glaze. Now we are ready for the enamel bodies. First, arrange the porcelain on a glass slab of generous size, so the shades can be kept separate. (Fig. 7). This should be done in the order in which they are placed in the matrix. Place the bottle showing the letter back on each portion. Make the arrangement in the same order each time, then you will not get confused in your shades. Place before you the chart made when you took the shades as a guide in blending the colors. At this point in the procedure you are called on for something more than the skill of a mechanic; it is the place to show how much of an artist you are. The matrix has now been well supported by the "lining" and foundation body, so there is little danger of distorting it. But even so, do not use too much body at a time in order to hasten the operation. It is more profitable to make a good inlay in an hour than a poor one in 30 minutes. In applying your shades, start at the upper part; do not use too much porcelain nor build it down too far. Then add a little of the next shade and a smaller portion of the next shade at the incisal edge. Clear your margins with a brush; fuse to a full glaze. Now the incisal edge is well protected. For the next baking a larger quantity of body can be added. Watch the blending of the shades. Take particular care to keep the porcelain body from overlapping the margins so as not to form a feather edge. After the final baking allow the piece to cool off gradually in the furnace, in order to temper the porcelain. (Fig. 8). To my mind, the arrangement of the porcelain bodies as used here is the only scientific way to construct an inlay. Here we have three distinct bodies. (Fig. 9). Each has a different fusing point. The first, opaque body, 2300°; next, foundation body, 2210°, and the last, enamel body, 2080°. By this arrangement it will be apparent to you that the last baking will not disturb the first body used. But when you use throughout your inlay a body that has one fusing point and only biscuit the first part and glaze the last, I do not see why there may not be some change, and draw the matrix out of shape.

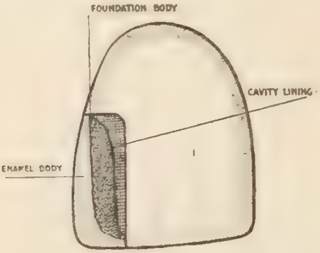


Fig. 8

Before removing the matrix place it in the cavity and see if you have the right contour. If it is correct, strip the platinum from the inlay by first pulling it back from the edges and carefully working it off.

Now comes the most exquisite time in the operation. You feel as if you had heart trouble—a "fluctuating fever;" your temperature is up; now down. No doubt the sensation is like that experienced by the speculator when playing the market and has staked his last dollar on the next quotation, and it is to make his fortune or bring his ruin. Will the margins be good? The color? Whew! The patient holds a towel so as to catch the inlay if it drops, and with thumping heart and trembling hand you slip the inlay into the cavity. The shade is fine! The margins excellent! You are about to give a war-whoop, when you remember you are a dignified professional man. The desire is strong, however, to go into the laboratory and execute a jig. But there is a letting down; you feel as if you had awakened from a delightful dream and reach the point where you realize it is time to get the inlay ready to cement in. First it must be etched. Take a piece of base-plate wax and shape it into a cone; then warm the apex and imbed your inlay. Be sure the margins are covered with wax, and then apply hydrofluoric acid with a piece of wood. Cover the surface thoroughly and let it stand two or three minutes, then remove the acid with water and a brush. After removing the inlay from the wax, put a little alcohol on it and use a small brush and thoroughly remove all white powder. This is important!

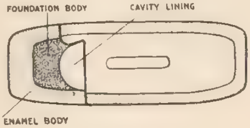


Fig. 9

If all the other steps in the operation have been well executed, the inlay may be spoiled in cementing it in.

CEMENTING THE INLAY.

I have never found it necessary to use more than one shade of cement. I have used "Ames' pearl gray" and "Harvard special" (light yellow), but these shades are almost identical.

Place the napkin in the mouth. Wipe out the cavity with cotton. Arrange a generous amount of powder and liquid on a glass slab. A bone spatula must be used. Take a piece of linen tape eight inches long and half an inch wide, and place it where it can be taken up quickly. It is a convenience in handling the inlay and easier to place it if you will attach it by varnish to a wedge-shaped piece of orange-wood. Everything must be ready because you must work fast: there is no time to hunt for instruments or pick up the inlay two or three times, or the cement will harden before you can get the inlay to place. Mix the cement as thick as you can and be sure the inlay will go to place. Place the cement in the cavity with a small instrument, like a canal plugger, bent at an obtuse angle. See that the cement covers every wall, is in the seat and over the margins. Now insert the inlay, and with the tape between the teeth (Fig. 10), force the inlay to place with a drawing motion that will press it into the resistance seat. Hold this for 10 minutes. The tape does two things; it gives equal pressure on all parts of the inlay, and wipes the joints free of excess cement. I consider this last point an important one, because it is better to have the cement harden with the natural gloss to protect it than to leave an excess over the joints and cut it off after it has hardened. For when you try to cut it off with disk or stone there is going to be a breaking of the cement away from the joints which will extend below the margin.

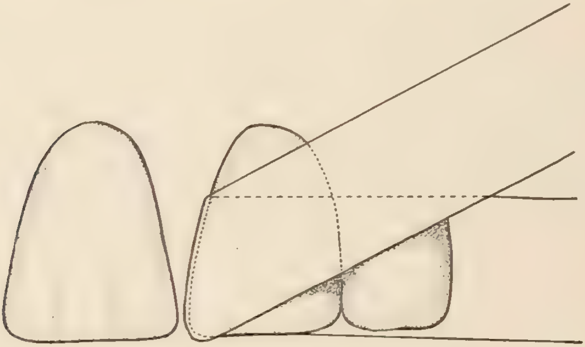


Fig. 10

When the tape is removed, varnish the joints. If the linen tape is too thick use strips cut from architect's cloth; this is thin and very strong.

The inlay may not be as good a shade as it was before it was cemented in, but when the cement matures and washes away from the margins, there will be a great improvement.

In conclusion, let me repeat the injunction I laid before you in the opening paragraph, because I consider it the fundamental principle one you must have ever before you in successful porcelain inlay construction. If you forget all else I have said, remember porcelain has not come to stay if you depend on the cement to keep it in the cavity: the cavity must have a broad, well-defined seat, not for the convenience of guiding the inlay to place when cementing it in, but for the purpose of providing adequate resistance against the stress of mastication.

DISCUSSION.

Dr. Price: This question of porcelain fillings is too large to discuss here in detail as we would like. There are, however, two or three great principles underlying this work that we have to recognize.

In the first place, to make a perfect porcelain filling we must make a perfect- (as nearly perfect as possible) fitting matrix, and we must reproduce the color of the tooth with our restored part. That does not mean merely to make the porcelain the same color as the tooth, but to make a completed operation, which, after cementing, will have the color effect. That brings in the great problem of the relation and position of the different colors. We may be able to make a relatively perfect impression, but let us understand that after we have taken the impression, we have several opportunities for spoiling its shape—first, by the tension of the matrix being changed by its annealing. The doctor suggests that it be annealed once before the final burnishing, which I think is not enough. Every time we burnish we have produced that condition in the metal which makes it necessary for us to anneal again before the metal will relax.

The man who makes the most perfect-fitting inlays is going to burnish his margins several times and anneal frequently. This experiment illustrates the warping of platinum due to heating and annealing, and shows a warping of one-eighth of an inch in three-quarters of an inch.

Another source of error in the change of the shape of the matrix is that any substance that has high specific viscidity and a great deal of adhesion has a great deal of power when shrinking. A viscid substance, like molasses, will make paper curl up when you put a drop on it, simply because the surface tension of that liquid is greater than the resisting force of the paper. Now, when we heat porcelain it becomes a viscid liquid, and one with very high adhesive property to platinum and also one with a great deal of contraction and shrinking on cooling. Every time we fuse porcelain on a piece of platinum and allow it to cool, it will try to assume a spherical shape, besides shrinking, which will tend to curl the platinum instead of stretching or checking to allow the platinum to remain unbent. Why did the platinum change shape? It was flat, but now it is the shape of a rocker. Simply because of the enormous force of the contraction of the porcelain on the platinum, which was not strong enough to prevent it. How are you going to stop that? When a man undertakes to build a structure of iron, to have the greatest strength and the least weight, he generally makes what he calls an angle, which we must do, and preferably use as wide margins as conveniently possible to leave the least possible distortion.

My own method is to re-burnish my matrix into the cavity with soft metal or wood point, and use just as much burnishing as I want to, fully expecting it is going to warp some in annealing. Each time, because of less burnishing, there will not be nearly as much relative distortion of the matrix. After annealing several times, I put in my first mass of material. One or two of our leading porcelain operators put shellac on the matrix, in order that the porcelain may pull away from the platinum and not distort it. Use simply enough porcelain so that the resisting strength of your platinum will be relatively greater than the warping strength of the porcelain. There are so many phases of this that we will have to pass some important steps.

I want to speak of Dr. Woodbury's method of taking an impression of his cavity from which to make or start the matrix. There are two reasons why I do not do so. It takes 10 or 15 minutes for the cement to get hard enough so that you can work on it. In that same length of time you can get as good an impression by directly burnishing it in the cavity, as that impression will produce and without doubling.

Have you ever been in a spinning factory and watched them spin brass? They start to work from the center and not vice versa. We should proceed in the same way to burnish the platinum over the margins. Be sure to do it in a way that you will not get a wrinkle. For my part, a filling is a failure if I have three thicknesses at one part of the matrix.

Now, regarding the use of different kinds of porcelain in the same filling.

The unit of shrinkage for a low-fusing porcelain is entirely different from that of a high. The strength is greater where one kind of porcelain is used than when we use two or several.

When you put white material, like opaque lining, under porcelain of any color, you have in proportion to the translucency or transparency of the porcelain a mingling of the lower color with the upper color, and the effect is the same as if you cemented it in with a cement as white as that lining. The question of using the perfectly white matrix lining involves the necessity of overcoming the whiteness by the colors used above it, and that becomes possible relatively in proportion to the thickness that you have to work on. In shallow fillings it is almost impossible to kill the white color and bring the natural color of the teeth.

Bake a piece of brown porcelain onto some of the lining material and you will see the color is entirely different. How are we going to overcome the color problem? Only by comparison or imitation of effect. I was surprised to read in Dr. Woodbury's paper that he used only one color cement for all conditions. In effect the cement is simply a colored curtain hanging through the mass which interferes with its transparency and translucency. Can we prevent putting that curtain in the mass of the tooth? No, we have to have it there. Then we must imitate the natural color effects by modifying these conditions, which will involve changing the position and angle of the margin, the color of the curtain and shape of the angle, as well as the color of the porcelain.

DR. DINSMORE: Dr. Price lays a great deal of stress on the shades of the cement. I fail to see the marked effect of the different shades of cement that he does. I use the different shades to the best of my judgment, but I would like to know in how many cases he could distinguish or name the shades used after they are cemented in, if he had a chance to examine them. I do not believe that he could come very close to it.

DR. WASSER: As far as using different layers of porcelain is concerned, I do the same as Dr. Woodbury. Start with a good-sized piece of matrix material and burnish it to margins and then burnish it down into the cavity. I pay no attention to the matrix or the body of the filling. I use a diamond disk instead of hydrofluoric acid for etching.

DR. BURT: Get the margin absolutely clear and sharp before any pressure is brought to bear upon the matrix on the deep-seated part, remove the matrix after first burnishing, paying very little attention to whether it is cracked or split, as it takes a very large crack to make any difference I have discarded hydrofluoric acid, and generally make a cross section of cuts with the diamond disk, whether the inlay is large or small, but it is rather difficult with small inlays.

DR. WILSON: As the amount of cement between the tooth and the inlay can be very thin, it seems to me that the pure white cement would not be objectionable.

DR. BELL: I would like to speak particularly of an impression. I think there are advantages in impressions which others do not seem to appreciate. I would like to demonstrate, and I believe that I could prove that I can make a matrix much quicker by placing the impression upon some modelling compound and swedging it with soft rubber.

DR. PRICE: You take the best ground glass stopper bottle and put cement on the cork and put the cork on the bottle and you cannot see through it. If you put water in it you can see through it. That little thin layer of cement will be sufficient to make it entirely opaque. You could put the cement on one part of the inlay and not on the other. I would not try to put more than two colors of cement between my porcelain and tooth. I would do that in this way: You put a little of the color you want next to the gingivae on the tooth and a little on the inlay, and have just as small a mass as you like, that is, enough to give the color to that part, then flow the rest right over that and it will have no effect on the color you put on first. It is very simple and very effective.

DR. STEPHAN: It is a good deal easier to show how to do things than it is to tell how to do them. It is not a question of the time it takes, but a question of ideals. Many have eyes to see but see not. The question of shrinkage is of great importance. We ought to follow some of the suggestions of some of the old-time porcelain workers, and that is, not to bake the inlays to a full glaze. There will be great shrinkage and stress brought upon the layers. We carry the bake to 2300° to get a full glaze. Every time the inlay is baked it shrinks more than it did the first time. So that if you repeat the heat up to this high temperature, and fully glaze, you will get a more dense porcelain than if it were baked at the same temperature each time.

We overbake the porcelain if we carry it to 2300° every time. It does not have the quality that it should have. Dr. Price is absolutely right about different colors of cement. You do not have to have a large quanity of cement; use just a little.

We are doing much better work now than we ever did before, but we are not doing any better work in proportion than the men who did their work years ago. That ought to make a plea for ideals. I am satisfied with inlays so far, and the next one I want to make better. Let us try the careful burnishing of the matrix and getting rid of this shrinkage, and in that way get better inlays. Experiment a little and see.

Dr. Kenyon: I believe most everything that Dr. Woodbury said and a great deal of what Dr. Price said, also. I do not see where there could be any harm done by putting an inlay back into the cavity and burnishing the matrix after the first and second and third bakings. I believe it is good practice.

The question of etching an inlay. In all the inlays I have seen which came out, where they had been etched, the cement left the cavity walls, not the inlay. The margin of your inlay should be waxed thoroughly before using hydrofluoric acid. If you do not get rid of the acid you will have trouble. Wash in carbonate of soda, then with a brush in running water, and then with alcohol. The soda will remove the acid from the inlay.

Dr. Barnes: Dr. Price touched upon one point and I thought, perhaps, he would bring out the point I had in mind, that is, the thickness of the platinum. I believe we may use a thick platinum with better results. I have taken a piece of platinum which has been used, and refined it and put it through the mill and made it as thin as I could make it. I still cling to my idea of the photographic film for burnishing the matrix to the cavity. It is strong and tough and conforms to the shape of the tooth and the inlay when you are placing it in, and you can also see through it and see what you are doing.

Dr. Ebersole: I was one of a few gentlemen who paid Dr. Peck of Minneapolis to come to Cleveland to demonstrate his method. Dr. Peck used the impression method. I burnish the matrix into the cavity direct. I use in that case the architect's linen or linen tape and do not place the burnisher upon the metal directly at any time. I believe that it is necessary, particularly in large cavities, to frequently anneal and burnish the matrix. In making a matrix, I use the tape and burnish into the cavity, paying little attention to the margins. After burnishing, I re-anneal my platinum and then burnish, and use a piece of rubber-dam over the margin in the place of the tape for the last burnishing. Get as wide a margin as possible. Of course, there are cases where we cannot have a wide margin, and in those cases burnish and trim the matrix. Someone suggested the use of an orange wood wedge, but I prefer pine from ordinary matches.

I agree with those who say that they like to have different color cements. I am not of the opinion that the white cement is at all desirable. I very frequently mix two or three colors of porcelain to procure the proper shade. I make a mix of what I think, from past experience, will produce the shade I desire; one part of A, three of B and one of C. Then I mix the three colors together and make a bake and see how closely that corresponds to the shade of the tooth. If it is not the shade, I again make a mix in different proportions and again bake until I have obtained a shade that corresponds as closely as possible to the shade of the tooth, and use that. I think that the last bake should be the glazing bake.

Dr. Woodbury: I want to thank the society for the kindly reception given the paper, and Dr. Price for discussing it so vigorously.

I do not think there is much to be said in closing the discussion. Dr. Price has not proved anything by his experiment, except to show us what we already know, that porcelain shrinks in baking. When you take a matrix you find that the margins are bent so as to form a rim, and that strengthens it so there is little or no chance for it to warp. You take a thin piece of platinum and bend it on itself, as Dr. Price has shown us, and of course it will warp; it cannot help changing when it is heated because there is no rim to stiffen it. And Dr. Price's other experiment has little practical value. You would not put a great mass of porcelain body on a thin, straight piece of platinum and expect no change in its shape. There is not one of you that would bake an inlay as shown in the experiment, even with the margins of the matrix stiffened with the rim; you would use a small portion of body and cut it to prevent it from drawing the matrix out of shape when it is fused, until the matrix is sufficiently strengthened.

In the use of the tape, someone speaks of the danger of displacing the inlay. Always draw the tape toward the resistance seat. If it is put in from the labial side, draw it down. I do not think that it is necessary to be able to see your inlay as it goes into place, when you have a definite place for it to go into. When the margins are well covered with cement, I do not see how you are going to see them anyway.

Dr. Stephan speaks of using a small amount of cement. You can only get into the cavity so much cement, anyway. You have to have a good excess so it will come over the margin. Some question has been asked in regard to the burnishing—not putting it back after the first baking to burnish it. If he can produce his results with the methods he uses, that is good, but in the matter of burnishing, I discarded that practice because I failed to get good margins by doing it. I have come to the conclusion that it is not necessary. That is the reason that I do not burnish after the first and subsequent baking.

Dr. Nyman of Chicago uses low-fusing porcelain on a high-fusing body to reproduce the enamel, for reasons which he presents. As he presented it, the method looked reasonable, but I found it to be impracticable.

The first exepriment I made was the baking of Jenkins on Brewster enamel. I made a half dozen or more bakings, allowing some to remain in the furnace until cool. There was checking of the Jenkins enamel, and with slight pressure it could be separated from the Brewster enamel. On White's body the Jenkins body seemed to fuse almost perfectly. Then I took a porcelain tooth, baked a piece of Brewster enamel on it, and then baked a piece of Jenkins. The Jenkins shows white opaqueness around the margins. It seems there was not a perfect fusing. I tried this several times with the same result.

I wrote a letter to Dr. Brewster, asking him the reason why Jenkins would not fuse on his enamel body. His answer was not satisfactory. However, he sent me some of their gold matrix body, which I used on the Brewster enamel body, but I found a little line which shows there was not perfect union. I would like to see this tested thoroughly. Some of you may wish to undertake these methods, but I believe you will avoid trouble by not attempting it.

The use of the bodies as I have used them. I would use the cavity lining for the purpose of strengthening my matrix. Then I use the foundation body over that, so that there is not so great a difference in the fusing points between the opaque lining and the enamel body, so there may not be the cracking and breaking away as shown in the experiments. I do not necessarily use the foundation body to reproduce the color of the dentin. I have made some porcelain inlays where I baked the enamel body on the cavity lining, and I found a weakness on the junction of the enamels. In baking an inlay, it is better to let it come to its fusing point slowly than to push it as rapidly as you can. In removing porcelain after fusing, I allow most of the glow to get out of the furnace. It would not check the porcelain to take it out just after it is fused, but I believe we have a better porcelain when we do not expose it suddenly to a very great change in temperature.

SOME IDEAS I HAVE FOUND TO BE A HELP IN PRACTICE.

BY DR. W. H SPAULDING, BEDFORD, OHIO.

In soldering up a crown or bridge, I find a common lead pencil a fine tool for teasing the solder to flow just where I want it. I prepare pencil for the work as follows: Sharpen pencil as for ordinary use, only making a longer slant to the point. I then cut the wood back, exposing lead for about one-half inch from the point. I then saturate the wood for about an inch up the shaft of pencil with diluted sulphuric acid. Then wrap lower part of shaft with strip of asbestos paper down to exposure of the lead and bind with wire thread. This helps to resist action of the heat from blow-pipe. It makes a light, cool and satisfactory tool that does the work much better than platinum, and it does not drag the solder as an overheated platinum point is apt to do.

TO REPAIR A MASON BRIDGE WHEN FACING HAS BROKEN OUT AND YOU DISLIKE TO REMOVE ENTIRE BRIDGE FROM MOUTH.

Proceed as follows: Select a Steele facing suitable for case as to size and shade. Then remove the platinum bar (which will usually remain in backing), and file a groove on either side of the bar that was baked in the facing until the bar will slide up and down easily in groove in the back of the Steele facing you intend to use. Adjust facing to backing with bar in place by taking a little off of facing at top or bottom, as case demands. When adjustment is satisfactory cement to place as usual. In case the cap at top of backing which keeps facing from pushing up into gum is torn off, file or cut a slot in lower end of dovetail groove of backing. Then solder a small piece of platinum on lower end of the dovetail bar with pure gold. File down to form a lug that will fit in slot you have made in backing. When facing and bar are in place grind from under side to a smooth surface and polish.

TO POLISH A PORCELAIN CROWN OR ANY PORCELAIN TOOTH THAT HAS BEEN GROUND TO CHANGE SHAPE.

Proceed as follows: Make a very soft paste of a saturated solution of spirits turpentine, gum camphor and pumice flour. Keep your polishing wheel wet with this mixture while repolishing the tooth. You will be pleased with the result.

◆

PREVENTIVE DENTISTRY AND MEDICINE.*

BY J. W. CLEMMER, M. D., COLUMBUS, OHIO.

By the request of the executive committee, I shall attempt to discuss jointly the papers of Drs. Barber and Hawley. By the same authority I am permitted to discuss anything in relation to preventive medicine and dentistry, although not presented by the essayists.

Under cover of these two papers, the entire field of sanitary science is open for discussion. The only criticism to be offered upon these excellent productions is that so much is presented for discussion in so short a time I shall not attempt to discuss in detail these papers. They are to be commended for their literary style and practical worth.

Dr. Barber mentioned the relation of bacteriology to prophylaxis. To Pasteur, more than to any other scientist, is due the credit of establishing prophylactic science upon the firm basis of bacteriology.

Bacteriology is the soul of sanitary science. It is the head and front of dental prophylaxis. From barber's itch to tuberculosis, it has revealed the causes of all communicable and infectious diseases. It reveals the pus organism as root and branch of oral pathology, through the variations of caries, alveolar pyorrhea, pulp disease, irregular dentition, neglected food deposits and decomposition, calcareous filth plaques, traumatism from toothpicks, and other exciting causes.

Please observe that these factors are mentioned as exciting causes. These are not the only etiological elements, however, entering into the difficult problem of oral pathology. Predisposing causes, equally important and forceful, as witnessed in systemic and hereditary conditions, constitutional dyscrasia, lowered vitality from many causes, as repeated pregnancies, chronic disease, or malnutrition from any cause, in lowering the resisting power of the organism, paves the way to oral disorders.

A clear conception of the dual factors of causation, that is, the exciting or local causes and the predisposing causes, must be entertained before rules of practice can be fully established. Especial attention is called to this important fact for the reason that, later on, I shall call attention to the dogmatic and opposing attitudes assumed by leaders in the prophylactic art, simply because they fail to grasp the entire etiology and pathology of oral disease.

---

*Read before the Ohio State Dental Society, December, 1905.

Other etiological factors remain to be determined as a matter of progress in preventive dentistry.

Dr. Ottofy says: "It is still an unsettled question to what extent racial, national, social, economic, geographic, sexual, hereditary and other influences affect the condition of the teeth."

As I understand it, the most important element in dentistry is etiology, because it is the key to the practice of prevention. As the art of prophylaxis is more important than dental surgery, so an understanding of dental decay is more important than crown and bridge-work. Bacteriology must also continue as one of the leading factors in dental progress. It should be understood that not all germs found in the buccal cavity are disease-producing. Some germs are always harmless. Even the pathogenic germs require suitable soil for propagation. The bacilli of tuberculosis and diphtheria may be found in healthy mouths. Other micro-organisms may be found without corresponding lesions. The conditions favorable to their propagation may be wanting.

Immunity is based upon healthy tissues and normal physiological activities. Nature has provided against bacillary invasion through phagocytosis. Pathologic processes are thus held in abeyance, but nature's protection is limited. The microbe invasion may be overwhelming by the persistence of local conditions. Since there is a lack of definite knowledge of the conditions favorable to germ life, as for example in pyorrhea, practice should follow the teaching of Dr. Hawley in the prophylactic art.

While we have seen how constitutional causes produce effects, we must not forget that oral causes produce constitutional effects. Certain diseased conditions of the mouth cavity produce systemic effects.

Sepsis from dental caries may cause indigestion, as well as infection of the body generally.

I have definite knowledge from personal experience of constitutional disturbances, such as slight rise of temperature, chilly sensations, aching and general malaise, all of which disappeared with the extraction of a pyogenic tooth and the consequent drainage of an alveolar abscess. The fact of systemic infection from purulent oral disease doubtless is a common observation in dental surgery. As intimated, the writer is personally interested in alveolar pyorrhea, and takes this occasion to make two observations: (1) that the prophylactic art as presented in Dr. Hawley's paper, in destroying and preventing bacterial foci, for the first time in dental history, offers hope of relief from this destructive and prevalent disease, and (2) that the theory of constitutional causation, as the uric acid diathesis, being wholly accountable, is the mercinary product of commercial enterprise, in establishing a market value for proprietary nostrums. This whole subject is referred back to what was said as to the action of both exciting and predisposing or constitutional causes in accounting for oral disease. The protest is registered against ignoring local conditions and paying tribute to the commercial advertiser, who in turn stands as the highest exponent of dental therapeutics as well as the highest barrier of dental prophylaxis.

Anyone who thinks beyond the play of dental instruments is constantly reverting to the fundamental studies of bacteriology, etiology, pathology, and the like, upon which to base dental progress. Thus he finds himself embracing prophylaxis as the highest development of dental science. Without such scientific study the dentist is a mechanical artisan, only to be classed with clayworkers and brickmakers.

The failure to recognize right relations of the various etiological factors and pathological conditions has led to a one-sided development of preventive dentistry. This failure has developed conflicting theories and factions in dental prophylaxis. Dr. Hawley's paper presents only one faction, with Dr. Smith as champion of local prophylaxis.

To the Philadelphia dentist is accorded the honor of instituting an advance movement in dentistry that has earned for him the grateful mead of being a benefactor, but alas and alack! his enthusiasm and devotion to a single idea, that of local prophylaxis, has carried him beyond the confines of scientific deduction. He attaches due importance to the local or exciting causes of oral disease, but denies the effect of predisposing causes. The etiology of morbid physiology or constitutional dycrasia are not allowed any relation to morbid effects upon oral tissues. He denies the physiological use or necessity of mastication, insalivation, or assimilation in relation to dental disease. Vicious habits and hereditary or constitutional vices have no etiological relation to oral diseases. His effort and his theory are to develop oral hygiene as a matter of local prophylaxis to the exclusion of all other influences. Such argument is more oratorical than scientific. The mischief of his false doctrines find compensation in his great pioneer work of practical prevention.

Dr. C. R. Taylor, of Illinois, and Dr. Richard Grady, of Maryland, are representative of the opposing faction. They agree that dental integrity, to be attained by the race, must mediate through proper use of the teeth, mastication, insalivation and assimilation. Predisposition toward disease of the body must be corrected by elimination of faulty conditions of race and inheritance. Correct diet and proper use of the teeth will prevent oral disease. The teeth are auto-cleansing if properly used. With good health, a vigorous constitution and normal resisting powers, according to this doctrine, a healthy mouth is maintained without prophylactic art.

Truth lies between these two extremes. Scientific deductions do not conflict, and when the bubbles of enthusiasm and false theories collapse there will be found a unity of etiology to divide honors between the exciting and predisposing causes of oral disease.

The oral cavity affords a sharp index to the general health. Diagnostic signs are seen in the physical properties of the secretions, of the teeth and mucosa lining the buccal cavity.

Drs. Michaels and Kirk teach the doctrine of determining the nature of systemic disease by a study of the saliva. The importance of mastication, insalivation and assimilation, is the *sine quo non* of both dental and general health. The doctrine of inherent dental virtues through developmental, racial and constitutional influences, together with proper dietary and proper use of the teeth, is based upon ethnology and common sense. But this fact does not support the theory that prophylactic science depends wholly upon this doctrine. It is only one side of the equation, the other is found in the teachings of local prophylaxis as presented by Dr. Hawley's paper. The sum total of preventive dentistry lies in the unity of both local and general prophylaxis. The one cannot be espoused to the exclusion of the other without blundering platitudes. Of necessity the future of preventive dentistry lies along the parallel lines of local and general sanitation. The papers just read present the details and virtues of oral sanitation. The thought is added that because of the possibility of preserving the natural teeth, now fairly demonstrated over and above the old process of filling, the highest duty of your profession and your art is to conform your energies, public and private, to the re-establishment of practice upon the new order and benign influence of modern dentology. A new era in dentistry calls for adaptation of the public mind to the attainment of dental blessings in exchange for the tortures of denticeps and artificial teeth.

Statistics declare that 30 per cent. of the teeth of children, from the ages of 5 to 15, are diseased. The natural increased percentage of carious teeth with increasing age only multiplies the use of forceps. This astounding fact, in the face of preventive measures, is an insult to the progress of the age. The truth of preventive medicine and dentistry is not generally understood or appreciated. The remedy for ignorance is education. The remedy for unhealthy homes and unhealthy living is hygiene, public and private. Under the premises of dental decay everywhere, and of oral hygiene at the tip of your fingers and tongue, what is to be done? The question is not commercial, but altruistic.

Allow me to suggest and to urge a line of action:

Place oral hygiene at the top of the list in college announcements. Amplify the work of education in oral sanitation within your own ranks. Teach your patrons the gospel of prophylaxis. Prepare for the extra work by enlarged facilities. Put your professional house in order. Study anew the art of oral hygiene. Indicate by word and action that you are converted and committed to the philosophy and practice of preventive dentistry. This will be an entering wedge to open the eyes of the public to the work and benefits of oral sanitation. Do not let your ambition be satisfied with the mastery of one branch of prophylaxis, but go beyond local means and teach the people general sanitation, as an essential element of oral hygiene.

If you would be complimented with the highest honor of your profession you must enter the rank of sanitarians.

The very nature of your profession makes it incumbent upon you to side-step a busy life, at times to give the public the advantage and benefits of your capacity for the public good. Besides, every dentist, if he be ethical and honorable, owes a duty to his profession in aiding in the development of its highest possibilities in public policy and public good.

A little philanthropy, mixed with your professional erudition and dignity, will do you good, will do your neighbor good. How is all this to be done? The answer is easy, organized effort.

What is to be done; the work of public sanitation in general and the work of oral hygiene in public institutions and in the homes of charity, in hospitals and dispensaries. Enter the public schools in company with local health authorities to unite general and special hygiene, and this is to be done by organized effort through legislative committees and your local societies.

Sanitary administration in some cities and in a number of countries provide medical and dental inspection of public schools. Dental inspection should be inaugurated in this country. This would furnish, incidentally, important statistics.

To start the work, a dental room could be provided for the treatment of indigent poor pupils, conducted on the plan of a free dispensary. Oral hygiene should be introduced in text books. Dental prophylaxis should command equal attention with the physiologic and moral effects of alcohol. The time limit of this discussion will not permit me to enter upon the subject of state medicine or dentistry. I am convinced, however, that the matter of oral hygiene stands in direct relation to public institutions, public schools, hospitals, dispensaries, charity homes, etc.

From the known causes of oral pathology and the known means of prevention, as advanced by your profession and art along the lines of modern prophylaxis, there is no question as to your relation and duty to the public good. The improvement of racial, hereditary and constitutional influences constitute the highest exponent of dental prophylaxis.

The highest duty of the dentist is to meet these facts fairly and honestly by efforts in behalf of public hygiene. The dentist and physician, from the nature of their professional relation to the public, are obligated to aid in the administration of public sanitation. It is not enough to say that the people can take care of their own interest. In technical matters the people are but children, requiring education. This is especially true in hygiene, as exemplified in the recent epidemic of typhoid fever in the city of Columbus.

Pending the completion of an enlarged public water supply and a filtration plant by municipal authority, the only protection of the public health was urged by the board of health in warning notices through the press, to boil the water. Despite this prophylactic measure, there were two thousand cases of the disease. In a house to house canvass of the city by sanitary officers, it was learned that only one-half of the people observed the injunction to boil the water.

This goes to prove the fact that the people require protection, education, and even coercion, in matters of public hygiene.

Now that I have fairly presented the importance of general hygiene as related to oral prophylaxis, it is in the line of progress and duty that you should follow the lead of sanitary science and rise to the worth, dignity and altruism of public sanitarians.

THE EFFECT OF PROPHYLAXIS UPON DENTAL PRACTICE AND OUR DUTY REGARDING IT.*

BY C. A. HAWLEY, D. D. S., COLUMBUS, O.

Prophylaxis, as defined by Dr. D. D. Smith, of Philadelphia, its originator, means the removal of all extraneous material from the teeth, not only of the hard deposits and stains, but of all adhering viscid gelatinous films, which, to the unpracticed eye, are invisible; the removal of these substances not once, but often enough to keep the teeth absolutely clean.

It is not my purpose in this paper to consider the technique of the work or at any length the benefits to be gained. These points have been fully and ably set forth by Dr. Smith in the various papers read by him in the last three years, and should be familiar to us all. I shall merely recall to your memory the comprehensive purport of these valuable theses by referring to their titles: "Septic Infection Due to Natural Teeth Conditions," read before the Philadelphia County Medical society, Jan. 28, 1903; "Six Years' Work in Oral Prophylaxis," read before the New York State Dental Society. July 20, 1904, and "Two Sources of Tooth Life and Their Relative Importance," read before the Northern Ohio Dental Society, June 7, 1905. The results of this treatment are also ably recounted by many other writers. I wish to mention in particular a paper by Dr. Edward B. Spalding, entitled "The Need of Oral Prophylaxis, and Some Results Obtained by It," read before the Michigan State Dental Association, July, 1905. In order to refresh your minds as to the benefits of this treatment

---

*Read before the Ohio State Dental Society, December, 1905.

I shall quote from the close of Dr. Spalding's paper, the "Specific Results of Oral Prophylaxis."

"As to the specific results obtained by the carrying out of oral prophylaxis, we find that it *does prevent* decay of the teeth gingivitis and pyorrhea, if not advanced too far.

"It will reduce inflammation in the soft tissues of the mouth.

"It lessens sensation in teeth in all localities, especially at the cervix.

"A change in the appearance of the teeth for the better is produced, giving them more brilliancy and life-like appearance than is seen in untreated teeth.

"Much disturbance of the digestive tract is remarkably lessened, if not entirely cured by the adoption of prophylaxis methods.

"The breath loses its disagreeable odor upon the reduction of putrefactive processes in the mouth and salivary secretions become normal.

"Thorough mastication creates a desire for the simpler foods, and prophylaxis places and keeps the mouth in such a comfortable condition that food taken into it is masticated for the pleasure it gives; whereas, food taken into an unhealthy mouth is hurriedly passed, almost unchanged, into the stomach, except to be somewhat contaminated by infectious material.

"Resistance to infectious diseases is increased by lessening the number of germs in the mouth and raising the vitality of the tissues.

"One great result is the interesting of the patient in the care he gives his teeth himself and educating him to a keen sense of any uncleanliness in his mouth. He cannot know the difference between a healthy mouth and an unhealthy one until he has been under treatment for a time.

These results of systematic prophylaxis, so well stated by Dr. Spalding have been proven unquestionably by Dr. Smith and are substantiated by every one who has taken up this work thoroughly and earnestly. They can be duplicated by any one who will attempt to do so for himself. The value of the work and its success cannot any longer be successfully questioned.

This being true, is it not worth while to consider for a moment our duty regarding prophylaxis and the effect of so radical a change in the treatment of patients?

Our duty is plain and clearly defined. It must be a campaign of education. The demand will not come from the laity until pioneer work in education is done by the enthusiasts. Let us all be enthusiasts.

Prophylaxis means a change in the dentist's attitude toward his patient in this respect; our attitude toward our patients has been too much that of "the jobber." We have made fine mechanical restorations, have "fixed up the teeth," as we hear it so often expressed, ended with a perfunctory cleaning with the object of making them look better, and a few hasty directions about their care, expecting to see the patient again in six months or a year, or when he has trouble.

On the prophylaxis basis, we become the guardians of the health of the mouth and teeth. The professional status is higher, and the relations between dentist and patient closer and more responsible. It encourages the best appreciation of the patient. Prophylaxis will receive the endorsement of the medical profession and help much to correct the prevalent impression that dentistry is mere mechanics. No less skillful work must be done in restoring the ravages of caries; in fact, the tendency is toward a much better mechanical operation, for it will be under closer observation, and if not well done will smite our conscience not once a year, but once a month. One of the most serious indictments against the dental profession is that it has heretofore done practically nothing to effectively prevent decay of the teeth. That indictment must be *quashed*.

To the young man gaining a practice, prophylaxis will add greatly to the benefits and services he can give to each patient, and will not present great difficulty in management. To the busy practitioner already crowded with work, it becomes a serious problem. But the work must be done even if he must select only the most desirable among his patrons, and let some wander off to gladden the heart of his less fortunate brothers. Whether a considerable part of this work in prophylaxis can be successfully done by trained assistants has already been discussed by this society, and I think a committee was appointed to recommend some course of training for them and some changes in the state law to make their employment legal. In my opinion, a skillful young woman can do a large part of this work in healthy mouths, and this includes the mouths of most children.

Our duty to our young patients demands that we vigorously push this work among them. Nowhere has dentistry been more hopelessly at fault than in the treatment of the mouths of children, and in no place has more trouble to the future masticating organs started than in the loss and lack of use of the temporary teeth. It is the cause of a very large per cent. of the cases of malocclusion, and there is no doubt but that prophylaxis will do more than anything else to prevent them. And as has been pointed out many times, malocclusion is one of the great causes of disuse and consequent disease of the permanent teeth, and so results in the great need for prophylaxis in the permanent set.

From the standpoint of the orthodontist, while prophylaxis promises to remove a large share of the causes of malocclusion, at the same time it gives him the greatest encouragement in insuring the permanence and endurance of his work.

Orthodontia and prophylaxis are the two great questions before the profession today. Orthodontia is of great value to prophylaxis, for, with the teeth in normal occlusion, the possibility of the use of the teeth is restored and the normal functions of the jaws made possible.

With orthodontia and prophylaxis we can look forward with hope to a check in the degenerating tendency in the human jaws, to a natural development of the beauty of the human face, to the prevalence of the refinement of a healthy, clean mouth and a great addition to the enjoyment of life.

THE SELECTION OF FILLING MATERIALS FOR DENTAL PROPHYLAXIS.*

BY N. S. HOFF, D. D. S., ANN ARBOR, MICHIGAN.

In selecting this topic for consideration, it is not the intention to indulge in a comprehensive consideration of the chief merits of all materials and methods that are advocated for stopping decayed teeth, but to direct attention to one of the most important factors in the problem of securing practicable oral prophylaxis. It is the one factor which, it seems to us, has not received the consideration it deserves in the discussion of this subject.

---

*Read before the Ohio State Dental Society, December, 1905.

The special purpose of prophylaxis workers has apparently been to rescue the teeth from the influence of abnormal deposits of calculus, and the gums from destructive suppurative processes caused by pyorrhoea alveolaris, and similar diseases. The usual treatment consists in the most thorough and careful scaling of the teeth and their roots and the polishing of their surfaces with suitable abrasives by hand-manipulation, with little or no attention given to medication. It has been claimed by many that there is nothing new in this treatment, as the same kind of treatment was recommended and practiced years ago by Dr. Riggs, and many others. While these statements are doubtless true, in part at least, there can be no question but that the thorough and systematic treatment which is recommended by Dr. D. D. Smith, if not new in principle, is certainly a distinct advance on any treatment heretofore seriously advocated.

The feature of this new propaganda, which furnishes the theme of this paper, is the stress given to the securing of conditions of the teeth which shall make it possible for the patient to maintain a condition of cleanliness by practicable oral toilet methods, and with available toilet facilities. Whilst Dr. Smith is doing a great work in rescuing dental organs that are many times almost hopelessly lost—so far as any proper function is concerned—from active pericemental disease, he most strongly urges similar treatment for preventing such possibilities in the future. He therefore advocates the beginning of this work, and its continued application, with the eruption of the deciduous teeth, with intent to prevent the possibility of any of the teeth from becoming carious or having a diseased environment.

For obvious reasons, we all know that such a millennium can not be reached at once, and it may never be reached in a sufficiently successful degree to make the filling of teeth or the restoration of lost crowns of teeth by crown and bridge-work unnecessary operations. We shall always, from the very nature of circumstances, which result from our present methods of living and social conditions, be called upon to utilize these reparative mechanical procedures to replace organic structures destroyed by neglect, disease, or accidents; in order that we may help on the very excellent prophylaxis methods now advocated for preserving what remains of that most admirable and effective organism, which, it is evident, our Creator intended should remain intact as long as there was any function required of it. And since prophylaxis has not yet, nor is it likely for some time, saved the teeth intact in their proper places in the dental arches, it seems that we shall be forced to consider and value our prosthodontic materials from the prophylaxis standpoint and see if it is practicable to make any improvement in our methods of using or selecting these materials and measures to help on the prophylaxis idea.

No one will question the very evident statement that a completely normal dental organism, that is, a full complement of well-developed teeth in normal relations as to contour and occlusion, should provide the best oral as well as systemic hygienic conditions, and conversely that any deviation from such a condition should render oral prophylaxis more difficult of maintenance. It should, therefore, be the aim of the prosthodontist to replace lost or deformed dental organs to as nearly typical conditions as may be practicable.

FILLING MATERIALS FROM A PROPHYLAXIS VIEWPOINT.

As the typical or ideal is ever before us, we do not need to spend time in designing the form of our artificial structure; but there is such a wide difference in the nature of available materials that we have necessarily spent much time in the study of these from the standpoint of durability, aesthetics, and adaptability, so that we now have fairly well settled convictions as to the desirability of the several materials from these standpoints. Without discussing them further we should consider the materials carefully from the prophylaxis viewpoint. To do this, we know of no better method than to review briefly each material and try it out on its own characteristics.

CEMENT.

No material has been used more consistently, or with greater longing that it shall some day supplant other materials, than cement. The reasons are chiefly that it most nearly resembles the tooth structure in color and is easily and quickly manipulated. At the same time, it so far has proved the most unsatisfactory of filling material because of its lack of durability. From the prophylaxis standpoint, it has very little to commend it. It is neither antiseptic nor germicidal. Because of its friable and soluable character, it is a very poor material for restoring either proximal or morsal contours. Incisal surfaces, or cusps made with cement are so readily worn away by the processes of trituration that teeth so restored have no continuous or permanently effective function. Proximal contours will not stand, and the V.-shaped spaces which soon result invite disease of the gingivae because of the continued irritation of food impacts and the fermentation of food debris lodged between the teeth. Then the surfaces of cement fillings are rough and difficult to keep free from contaminating oral secretions, which saturate the porous material, presenting a most unwholesome condition, which it is impracticable to destroy by any mouth toilet which a patient may safely use; and which the dentist can only remedy by the removal of the old and replacing it with another batch of new material. From the prophylaxis standpoint, this material has, therefore, nothing to recommend it, but much reason for total condemnation.

AMALGAM.

The material most frequently used in the posterior teeth is amalgam, which, viewed from the prophylaxis standpoint, is only slightly more desirable than cement. It probably has inherent antiseptic, and even germicidal qualities; but because of its unstable qualities it produces conditions most favorable to oral sepsis. It changes form in proximal relations, and attenuated edges shrink from the cavity margins and fracture, inviting collections of putrefactive materials which endanger sanitary conditions of the teeth and gums. It is difficult to reproduce contours or maintain them, either on the proximal or morsal surface; consequently the functions of the teeth, so desirable in maintaining cleanliness, are only partially performed. The shrinkage of amalgam from the cavity margin in proximal fillings, the constant changes in the form of its contour, and the etching of its surfaces by the oral fluids, invite deposits of extraneous material which breeds disease-producing agents, in spite of all the efforts of patients to prevent by using with the utmost constancy and vigor the ordinary toilet measures. Amalgam makes a resistant filling which does not dissolve at the cervical margin as do the cements, and in this respect it should be preferred to the cements. The greatest care should be exercised in constructing amalgam filling to secure complete normal contours, and to guard against frail edges liable to fracture, and these fillings should be most carefully polished after they are sufficiently hard, and kept so by frequent polishing with fine strips or by prophylaxis measures. If properly made and cared for, such fillings may be made to conserve the teeth and aid prophylaxis efforts.

GUTTA PERCHA.

Gutta-percha is so seldom used as a filling material for permanent work that it needs but little comment; except for the fact that it is so frequently used as a filling in proximal cavities of deciduous teeth, to preserve the space in the developing jaws until the permanent teeth are erupted. From the prophylaxis standpoint, however, it possesses no merit whatever. In fact it is the most objectionable of all filling materials, since it presents surfaces difficult to keep free from deposits, and it encourages fermentable deposits with no inhibiting reaction of any sort. It is so readily displaced by the masticating functions that it provides places for catching the food and its retention until it is decomposed by unwholesome putrefaction. It crowds onto the gums and causes irritation and recession to an undesirable extent. It is very difficult to keep a mouth containing much of this kind of filling in a healthy condition.

TIN.

Tin has many virtues and is much used by some operators, as it seems to exert a peculiar therapeutic action in preventing the progress of dental caries. Personally we have never experienced the results claimed by many in using this material, and it has objectionable qualities which exclude it from use in the larger proportion of carious cavities. From the prophylaxis standpoint, it is not the ideal filling, because it is so soft that it can not be relied upon to maintain contours, and it will not retain a smooth or polished surface even in locations where it is not subjected to the wear of mastication. It corrodes in the oral secretions, and the surface is soon etched by these reactions, rendering easy cleansing by the usual toilet methods impracticable. Even when combined with gold, although the mass of the filling becomes very hard, it soon becomes rough, and invites accumulations rather than prevents them, and is consequently unsanitary, even though it may have an antiseptic reaction.

GOLD.

Gold as a filling material, although not ideal, has maintained its position as standard for so long, because of its many desirable qualities, that it would seem schismatic to intimate that it is not an ideal filling material from the view which we are now considering. Gold is probably the best material for reproducing and maintaining contours, when the proper form of gold is used, and it is manipulated expertly. Some forms of gold can not be manipulated into perfect contours that will endure the stress of mastication, but will eventually break down. Other forms of gold with slight cohesive properties loose their polished surfaces, which are such important aids to oral prophylaxis. Incisal edges and cusps can not be restored with noncohesive gold that will withstand the continuous heavy impacts to which the teeth are subjected; and even the more cohesive forms of gold are not above criticism from this standpoint. The so-called heavy foils properly manipulated will present comparatively durable wearing surfaces. The crystal golds can not be condensed so that they will not in time loose the polished surface even when used only in proximal relations, and the same is true of the non-cohesive foils used as such. Both of these forms of gold will sooner or later disintegrate at the cavity margins, leaving spaces for unsanitary accumulations; they become pitted and roughened from portions of the gold scaling away, leaving surfaces that may not be easily kept clean. Gold of all forms seems to have a wonderful capacity for preserving the teeth from caries when used skillfully. Its color is good and it is unchanging in tendency and does not disintegrate chemically to any appreciable extent. Its surfaces can be repolished and made, in large degree, self-cleaning. Its best form, from the prophylaxis view, is when used as an inlay, especially in the posterior teeth; because it can be worked into its hardest form by fusion and is capable of receiving a high and durable polish. If it is alloyed with a slight amount of platinum it will present a hard resistant surface which will take a high polish and be unobjectionable in color, even when used in exposed parts of the mouth. It has a great advantage when used in the inlay form for the restoration of proximal contours in the posterior teeth, because extension of the cavity may be made to meet conservative ideals without subjecting patients to the fatigue of a protracted foil operation in the same teeth. The objectionable cement line of inlays can generally be brought to an exposed surface, where it can be kept clean, and the usual space for the extraneous collections will be protected by a hard and smooth surface. Inlays, like fillings, must be made skillfully and with good judgment to bear out such claims. The more perfectly they conform to the cavities and to normal contour, and the more carefully the cavities are modeled the more nearly ideal they become as prophylaxis adjuncts.

THE PORCELAIN INLAY.

The porcelain inlay more clearly conforms to the prophylaxis ideal, because it provides the most sanitary or incorruptible surface. The polished surface of the porcelain inlay is more like perfect enamel than any other filling material, and probably makes the best prophylaxis filling. It is, however, inferior to the gold inlay in that it is friable, and where attenuated margins are necessary they are liable to suffer fracture and thus invite unwholesome conditions. It is not as easy to reproduce lost contours of incisal edges or cusps that are as durable as with the gold inlay. The practice of grinding the surfaces, which destroys the porcelain inlay's most valuable feature, unless it is reglazed before setting, should be avoided. The claim that recurrent caries about porcelain inlays is less frequent than with other fillings adds a great deal to the value of this material, especially if it shall be demonstrated that this is true at the cervical margins, as most fillings in the proximate surfaces of the posterior teeth fail at this point.

VALUE OF THE ENAMEL CUTICLE.

The inlay form of filling has the advantage of meeting the objection raised by Prof. W. D. Miller—see *Dental Cosmos* for August, 1905, page 915—who says that the excessive use of prophylaxis methods will remove the enamel cuticle on the proximal surfaces where decay is most likely to occur, and therefore will increase the susceptibility or tendency to caries. Prof. Miller, in his paper read before the Fourth International Dental Congress (see Proceeding I., Volume 1, pages 261-263), makes it clear from his experimental researches in producing caries artificially, that when the enamel cuticle is removed by filing or grinding, that caries takes place most readily at such points; and he states that when filed surfaces are not self-cleansing they are liable to decay. Since it is hardly possible to insert a gold, amalgam or tin filling in a proximal cavity without using the polishing strip to produce a smooth surface, it is very evident that the surfaces of the tooth adjacent to the filling for a considerable area must be entirely denuded of cuticle, and so rendered more susceptible to carious infection. This also bears out Dr. Black's contention that proximal cavities must be extended beyond the areas of susceptibility. Whether Dr. Black had this thought in mind or not, it seems that the results of the researches of these scientists harmonize to a remarkable degree with clinical experience. If the cuticle must be preserved to lessen susceptibility to caries, especially in those areas which are inaccessible for ordinary cleansing, it would seem that the inlay which does not require polishing after it is set with the abrasive materials used on fillings, and which presents the highest degree of smoothness or polish, should be the most desirable form of filling material; and also because its margins can be extended comfortably to the areas which are easily kept clean by the ordinary brushing of the teeth. The filling of the posterior teeth with materials which will obviate the necessity for the continuous polishing of these surfaces by the tedious prophylaxis methods will certainly be a great gain, and will result in popularizing this treatment with the profession. The prophylaxis treatment of the posterior teeth that are badly filled with all kinds of filling materials is so difficult as to be one of the greatest hindrances to the universal application of the treatment. If the proximal surfaces could be cared for by a self-cleansing and durable filling material, the exposed surfaces could be readily cared for in a very satisfactory manner, and a long step in oral prophylaxis will have been taken.

CLEANLINESS.

Dr. Miller, in his paper read before the fourth international congress, above referred to, says: "All the cases of immunity to caries which I have examined during the last few months have related to dentures where there was little tendency to retention of food particles." The preservation of the dental organism in such a condition of integrity and form, and the cleanliness of each tooth element is the avowed purpose of the prophylaxis treatment. Every tooth saved and in its proper relations and in the best condition to ward off the accumulation of deleterious substances, such as deposits of calculi, which intrude upon the gum structure and destroy it, or the adhesive soft deposits, which serve as culture media for micro-organisms and the consequent destruction of both the teeth and gums as well as the probable vitiation of the digestive elements, is the great purpose of this treament.

If, as Dr. Miller suggests, we must have conditions favorable to cleanliness, we should of course have the teeth in perfect orthodontic relations, and all crown and bridge-work should be constructed on principles which shall interfere as little as possible with the objective ideal. The much abused all-gold or cap crown can be constructed so skillfully as to more fully meet these conditions than the extensive use of the plastic filling materials. The recently designed all-porcelain cap or jacket crown, as made by Dr. Spalding (see *Items of Interest,* June, 1904), is an ideal method of restoring a tooth extensively mutilated by caries, or one that is so deformed as to encourage an unsanitary condition. Its application to the molar and bicuspid teeth is not only practicable and durable, but much more desirable than the all-gold crown or other forms of porcelain crowns. In fact, all forms of crowns, bridges or plates should be constructed with the prophylaxis idea as one of the most prominent qualifications.

MODE OF TREATMENT.

Now, since it is not practicable for obvious reasons to reconstruct the dental operations in every mouth that presents itself for prophylaxis treatment, what should be the policy of handling these cases to secure the best results? There is scarcely any case which needs this treatment—the patient being willing to submit to it—that we can not at least go over the mouth with care and repolish all the old fillings. Separate the teeth and polish the proximal surfaces, that can not be reached by the toothbrush, with fine abrasives, refilling and restoring contours where necessary. It is surprising what a lot of comfort the patient will experience from the thorough overhauling of the teeth in this way. Where a filling is found that may be saving the tooth, but is manifestly menacing the adjacent tooth or the gum, the patient can easily be convinced of the necessity for its replacement by a properly constructed filling of a suitable material. It will surprise most of us to discover what a lot of bad dentistry the people endure, when we begin to inspect the mouths of our patients from this standpoint. No other one thing will inspire so thorough a determination to strive for a more careful selection of the material to be used, and a more skillful use of it in repairing the damages caused by dental caries. We may not be able to do over all the bad dentistry of the past, but if this prophylaxis idea takes hold of the profession, as it should, future generations will have more skillful service and better teeth and better health.

DISCUSSION.

Dr. H. L. Ambler, Cleveland, O.—The presentation of the paper to which we have listened should result only in good, as all will admit that anything that conduces to oral prophylaxis should be seriously considered. In general, what was said about cement is true. In filling all proximal cavities with cement, where it is desirable to have the fillings last so long as possible, the cervical third should be filled with high-heat gutta-percha. To make a filling quite resistant to attrition and the action of the oral fluids, use two parts of cement powder and three of porcelain body, mixed with the cement liquid. All cements do not present a roughened surface from wear.

The essayist says: "That it is difficult to produce proximal contours with amalgam." In case of two adjoining fillings the teeth should be wedged apart beforehand, and only one cavity filled at the first future sitting; the other cavity should be filled with gutta-percha in order to preserve the space; when the patient returns, the amalgam filling can be trimmed and polished, then the remaining cavity can be filled with amalgam, building the material against the first filling, thus preserving the space gained by wedging. Allow the amalgam to set, and at a future time do the trimming and polishing. All amalgam fillings are not appreciably etched by the oral fluids, neither do they all shrink from cavity margins and fracture.

Gutta-percha may not have any prophylactic influence on the fluids of the mouth, but it does have a prophylactic influence on the teeth, and any cavity which can be kept dry can be well filled with it, and where there is no wear upon it, the fillings will last a great many years. We consider it very useful in the buccal or distal surfaces of third molars. A great many have conceded the fact that gutta-percha is especially well tolerated by all the oral tissues, and we fail to see how it causes recession of the gingivae unless it is in a proximo-occlusal cavity, where occluding teeth are continually forcing it.

The essayist says: "Tin is too soft and will not retain a smooth surface even in locations where it is not subjected to wear." The writer contends that with the proper kind of foil thoroughly condensed—preferably with a mallet—that tin fillings last from 10 to 30 years, and he has specimens to prove it. The specific gravity of tin is 7.29, and tin fillings have been made in matrices that had the above specific gravity. Tin fillings do not always discolor. The essayist says: "When tin is combined with gold the filling becomes very hard, but soon becomes rough." Tin and gold in alternate layers, equal parts of each, does become hard because electrolysis takes place, but if each layer of the filling has been well condensed and smoothly finished, the surface remains smooth as many gold fillings, and thus cannot be classed as unsanitary. We claim that tin is prophylactic and therapeutic, and that its good qualities have been known as a tooth-filling and saving material since 1728, and with the improvements made in manufacturing it into foil, its use is increasing.

That portion of the essay referring to gold and porcelain we are in general agreement with.

Dr. E. B. Spalding.—I think the excellent papers which we have listened to ought to stimulate an increased interest in the very important subject of "Oral Prophylaxis." When dentists have learned to control the causes of caries and of inflammations of the soft tissues in the mouth by prophylaxis methods instead of waiting for the partial or total destruction of dental organs and tissues, and offering mechanical substitutes, then will our profession occupy a more dignified position among the professions, and our ideals will be raised from mere mechanics, which so engross our thought at present.

In Dr. Hawley's paper he says that Dr. Smith's idea is the very frequent and thorough removal of all extraneous matter from the teeth. It is not only this, but also the stimulating of the teeth and gum tissue, promoting healthy circulation in them. With the old ideas of "cleaning teeth" the dentist considered it his duty to remove only such materials from the teeth as he and the patient could see, and too often it resulted in the removal of only such stains and materials as only the patient could see, and the operator would apologize to himself, saying: "I haven't time to do any more now."

The man who has worked a year or more in the regular thorough treatment of the mouth, as laid down by Dr. D. D. Smith, knows that many untreated mouths with teeth which look at first glance to be beautifully clean, sorely need the stimulating effect of hand treatment. He knows that the gums are below normal circulation, that there is undoubtedly a receding of the gums at the cervix of the teeth, and possibly erosion, and yet there are few deposits to be detected by the eye.

I wish to emphasize the fact that oral porphylaxis is not merely the removal of extraneous materials—especially visible ones—but it has other important aims and results. It requires a closer and more intimate acquaintance with mouth conditions, a study of them through a cultivated sense of touch, a careful watching and noting of the improvement from time to time during frequent treatments, which are constantly relieving the tissues of their irritating surroundings, stimulating them, and thereby allowing a return to normal condition.

I consider that the dentist who receives a patient and does several operations in restoration of lost tooth-substance, and when finished with them, beautiful though they may be from a mechanical standpoint, does nothing to correct the conditions making these operations necessary, is as culpable as the physician is who, taking a typhoid fever patient from a home with an infected water supply, to a hospital, cures him and returns him to his home without correcting the water supply.

Truly, the professional status is raised during the work of prophylaxis in the mouth, and our ideals advanced. We are constantly looking for more minute causes of trouble, and we soon find that our ideals are so far advanced that much of the mechanical work, fillings, etc., which pleased us a year or more before, seem crude to our later ideals.

The selection of filling materials for oral prophylaxis as treated by Dr. Hoff deserves much consideration in the attempt to keep a mouth in a healthy condition, and I agree with him heartily in the relative importance he has given them, viz.: porcelain inlay, gold inlay, gold filling, etc.

One reason for the superiority of an inlay over a filling which has to be trimmed, dressed and polished, after being inserted is, that it will nearly always have a more perfect contour and present a surface to its neighboring tooth which is more nearly as nature intended it to be—self-cleansing.

I like the point Dr. Hoff has made, that the surface of a filling made outside of the mouth will present a smoother, more highly-polished surface, less porous, and consequently less liable to the attachment and retaining of the various mouth-coatings.

Too much importance cannot be laid upon the sufficient separation before each operation of filling, no matter what the material, so that proper contouring is possible.

The study of those conditions in the mouth where there is trouble from the catching and retention of food and the substances for fermentation and putrifaction will teach the observer much and enable him to properly contour his fillings.

Extension for prevention is but the substituting of an indestructible filling material for the natural tooth substance at the localities where the uncared-for tooth is liable to be destroyed by the retention of materials producing fermentation. It is the relieving of the patient of the responsibility of properly caring for his mouth merely to prevent return of decay without removing the cause, which is farther reaching in its baneful results than decay of the teeth. Of course I believe in extension for prevention, but like many other ideas, it undoubtedly is carried to excess in an effort to allow the mouth to go uncared for in other ways.

I believe that it is entirely possible to take a child early enough and so control his mouth conditions that, with the aid of the orthodontist in bringing about normal occlusion if necessary, he may be brought to maturity without the necessity for more than a few occlusal fillings in the molars, and possibly not those.

DR. J. K. DOUGLAS, SANDUSKY, OHIO.—I have been convinced, since hearing Dr. Smith last summer, that many of us dentists are not doing all we might do for our patients. Since hearing Dr. Hoff's paper, I feel like calling myself a "jobber." He has indicated a means of treatment calculated to secure for our patients an ideal condition, as to their teeth. We should have been up and doing this kind of work long ago, thereby saving many a case of caries.

DR. IRA W. BROWN, CLEVELAND, OHIO.—The object of prophylaxis is to maintain the oral cavity in its normal condition. The solids and the liquids taken into the stomach pass through the mouth, are there triturated and insalivated, and when swallowed, digestion begins. The mucus that collects on the teeth, when allowed to remain, breeds disease, through the process of fermentation. Scientists admit that unless we have suitable environments, germs will not propagate. They will not breed in or on healthy tissues. Our mouths are full of non-pathogenic germs. They are indispensable to life. It is not the number of germs in the mouth we have to fear, but the condition of the tissues.

I do not favor Dr. Barnes' suggestion as to placing in the hands of a dental nurse the performance of so important a service as that of this new method of prophylaxis. That should be the dentist's own work.

Dr. J. S. Cassidy, Covington, Ky.—The essayist was mistaken in crediting the application of nitrous oxide gas to Dr. Morton. Dr. Wells, a dentist, first made practical use of the gas in 1844.

I commend Dr. Hoff's paper as illustrating what I have long believed of him; everything he says and does is always of the best. So much has been said and written on the subject of filling materials that nothing remains for me to say. But this new subject of prophylaxis seems so important that nothing is to be compared with it in importance He has proven to us that much remains to be discovered about prophylaxis. To accomplish ideal work we must, however, have ideal conditions, and they seldom exist in therapeautics. Therapeutics is full of elements of uncertainty, and without these elements of uncertainty we would not have any progressive evolution such as is necessary for advancement. Dr. Hoff has come to our rescue, in that respect. He has eliminated all those conditions of internal or external diseases which may occur—psychology, chemistry, physiology, and others. He ignores certain qualities in filling materials—non-conduction, pulp-protecting features, etc.; he considers only the quality of a beautiful, smooth surface, favoring prophylaxis. Now these are only mechanical considerations. He comes to the rescue again, condemns amalgam, when this much-abused material has been a savior of innumerable teeth which nothing else could save. With proper care in inserting it, this material is susceptible of a hard, smooth finish, such as he requires for his ideal condition, reasonably fulfilling the conditions, at least. I have seen fillings of amalgam made by Dr. Hoff himself, years ago, which were good. He takes up—perfectly consistently, in this respect—such materials as cement, gutta-percha, soft foil, crystal gold, and even cohesive gold, heavy foil—all of which is perfectly consistent and reasonable, from his point of view. Then he mentions the gold inlay, which is capable of restoring approximal contour. He speaks of "autocleansing" surfaces, a new word. In all this he is perfectly consistent, and I have no fault to find.

Dr. Ames has experimented with some degree of success, I understand, with a plastic filling in which porcelain body (powder) is mixed with the powder of the cement. The ideal filling for which Dr. Hoff yearns, with the rest of us, will doubtless be of a plastic nature.

In all I have said I mean to emphasize the great value of what Dr. Hoff has given us in this paper, and not to criticize.

Dr. G. V. Black, Chicago.—I have greatly enjoyed the paper. There is much to be done along these lines in the future. There will be much difference of opinion, as men observe differently. I like these differences among the members of the profession. They will average up for good. I have watched this matter of treating, after Dr. Smith's teaching, for many years, to see the outcome of it, in individual cases. But it is nothing new; it was practiced many years before he taught it. A San Francisco dentist employed the method, with all the essential details Dr. Smith gives, years ago.

There can be no question as to the benefits of perfect cleanliness in insuring the patient against decay—*perfect* cleanliness.

W. G. Ebersole, Cleveland.—I am told the cry is no longer for "extension for prevention," but rather "prevention to prevent extension." That, if so, seems to me definite progress toward the ideal.

Last year I denounced from this platform " extension for prevention"; today, from this same platform, we are told there is no necessity for "extension for prevention." Not if we are able to carry out the suggestions of the paper to perfection. Dr. Smith has found it hard to establish his doctrine. We dentists in Ohio are just waking up to the importance of his teaching.

I have for three years employed a lady assistant to do this work of a dental nurse. The credit of this suggestion is, as many of you know, Dr. C. M. Wright's. He has for years urged upon the attention of the profession this proposition to delegate to a lady assistant this special line of work. I see no quackery, as it has been called here this afternoon, in shifting this work upon a trained assistant. I think the dental nurse is destined to receive the same recognition, in her sphere, as the medical nurse receives in her special field of operation.

The important question after all is, can we impress upon the laity, our patients, the necessity of their co-operation?

Dr. C. M. Wright, Cincinnati.—I have experienced three distinct tickles this afternoon. (Laughter). First of all, we have had three papers read here, all in line, favoring the doctrine of prophylaxis. Dentistry has its two sides—its technical and its scientific sides, neither of which have we any occasion to feel ashamed of. We naturally see the technical side first, and admire Dr. Smith for his technical demonstration. But we also as a profession pay due regard to science. Where has greater work been done by scientists, in etiology, physiology, pathology than we have done!

I have been tickled, in the second place, to see a medical man get up in a dental society and take part in the discussion. Finally, comes the third tickle from Dr. Ebersole. I can't stand it! (Laughter).

Dr. W. V. B. Ames, Chicago.—I certainly cannot get up here and rub it into Dr. Hoff, on the subject of cement, as Dr. Ambler did on tin. Dr. Hoff's paper pleased me. The selection of materials with which to obtain better prophylactic conditions is the same old question we have for long years been studying and experimenting to answer effectively. I am not actually familiar with Dr. Smith's method of prophylaxis. We must have a substance which will take and hold a fine polish, to fulfill the conditions. The prolonging the life of cement fillings by mixing in with the cement powder some of the powder of porcelain has been suggested. I have thought perhaps the particles of porcelain settled together in such a way as to form a kind of mosaic, the particles closely set together, and united by the cement, so as to form an impervious surface. But I am not sure—am inclined, however, to think there is something in it. There has been an epidemic of cements, lately—calcium oxide, silica, alumina, and others.

I am almost as much tickled as Dr. Wright by the references to gold inlays. Ten or twelve years ago, or more, I gave gold inlay clinics, and was called a crank. I am pleased to learn that Dr. Hoff approves of the gold inlay.

Dr. Hoff.—It was not my own suggestion that I read this paper, and I am not responsible if it conflicts with anyone's notions. I appreciate as well as anyone that we have to use all these filling materials. I haven't a doubt that some tin fillings may last for 60 years; why shouldn't they? and what if they do, if they fail to restore function? I have no quarrel with anybody about tin. When I say tin is antiseptic, that has nothing whatever to do with the fact that it is unsanitary. The whole point of my paper is this: the preservation of all the teeth by the best possible means now known, or to be discovered, in their normal condition. Restore normal conditions, and preserve them. Not merely to clean, and fill and polish, and all that, but to restore normal function. The ambition of Dr. Smith, and of everyone who undertakes with enthusiasm this special work of prophylaxis, is to restore and preserve the functions of the entire mouth. Imperfect articulation of bridges, or even single crowns, disturbs the function of mastication. Take plaster impressions of both jaws, and mount the models on an anatomical articulator, in order that you may determine perfect occlusion and get freedom of motion, whether it be a bridge or even a single crown you attempt to set. As nearest approaching the ideal, when the question of filling arises, porcelain inlays, or gold inlays, seem to me to most satisfactorily meet these requirements.

◆

REMOVABLE PORCELAIN BRIDGE*.

BY HARRIS R. C. WILSON, CLEVELAND, OHIO.

Clinic consists of a metal skeleton, also a completed removable porcelain bridge for the upper left cuspid, lateral and central incisors; two attachments and dummy lateral incisor.

Roots are prepared with cap of 22k. gold and sealed tubes of 32g. iridio-platinum. Bridge consists of two split pins with floors to fit above cap and 14g. square wire of iridio-platinum to form a support; all being soldered with pure gold. Facings are ground and soldered to frame and the lingual contour built up with porcelain to give natural feeling to tongue.

Advantages are:

May be removed to clean.

May be removed to repair.

Will not insulate the tissues.

Does not show any metal.

Feels like teeth, while bridges with self-cleansing spaces are not natural to the tongue.

THE MAKING OF GUM-SECTIONS WITH PROSTHETIC PORCELAIN.**

BY W. B. FAHNESTOCK, D. D. S., CINCINNATI, OHIO.

Not infrequently we find it preferable to use porcelain sections in partial cases where one or more of the incisors, either superior or inferior, have been extracted, and where considerable recession of the alveolus has resulted.

Restoration of the facial contour with a harmonious and life-like arrangement of the teeth is quite impossible in the majority of cases, when stock gum-sections are used, owing to their stereotyped regularity, the disproportionate size of the lateral incisors and the absence of natural tooth contour which characterize this product of the tooth manufacturer.

---

*Report of Clinic given at Ohio State Dental Society, December, 1905.

**Clinic before the Ohio State Dental Society at Columbus, Ohio, Thursday, December 7, 1905.

It is a lamentable fact that artificial teeth as a rule, tend to the conventional rather than to the natural forms; consequently, it is almost impossible to produce a partial or a full artificial denture which is not conspicuous as such.

In the face of these difficulties, we are called upon to supply artificial dentures which will not only replace the lost organs of mastication in a practical degree, but we must restore also the natural facial expression as far as the dental organs are concerned.

To accomplish this successfully calls for the production of natural effects, through the intelligent selection and ingenious combination of those materials at hand which will produce the most harmonious results. There are probably no class of cases which call for a greater display of art than those where several or all of the incisors have been extracted, the alveolus receded and the sunken lip, when retracted in laughing or speaking, is elevated a little above the gum-line.

Pre-existing irregularities of the natural teeth, present or dependent irregularities of the occluding teeth, when considered in relation to facial expression, call—in the artificial substitutes—for a fac-simile of characteristic type and arrangement of the natural teeth.

Plain teeth of the proper type or mould, with porcelain and gum-enamel added to restore the deficient alveolus and gum tissue, will serve the peculiar needs of these cases better than will other combinations of teeth and gum substitutes, so I will endeavor to explain a simple and practical method for making gum-sections in such cases.

For example, let us suppose that the right superior lateral, and the right and left superior central incisors, have been removed. The remaining teeth and the features show that the V-shaped arrangement with lateral and central lapping from right to left is characteristic. The gum is exposed when the lip is normally retracted.

Obtain a good, hard plaster cast and obliterate all imperfections so that the cast will convey the expression which it is desired to bring out by the subsequent arrǎngement of the artificial teeth.

Outline upon the cast the exact area to be covered by the artificial gum and deepen this area slightly by scraping lightly and uniformly throughout. Make the border of this deepened area defined, as though the finished section had been slightly pressed into the cast.

Burnish thin platina upon this area, allowing it to lap over the alveolar ridge for an eighth ($\frac{1}{8}$) of an inch, fit it closely about the teeth on either side and trim accurately to shape.

Cause this to lie closely against the cast by burnishing and by pressure with thumb and fingers in the same manner that tin-foil would be placed upon a cast for vulcanite denture.

Since the plate in this case will, supposedly, be made of vulcanite, select "vulcanite teeth" which will most nearly approach the desired form, and then, if necessary—and it will be necessary—modify their form and give them character by judicious shaping with an Arkansas stone, and polish in the usual manner before each is finally fixed in the wax upon the cast. Now place platina saddle upon cast and arrange teeth upon same, using only sufficient wax to engage the pins securely and extend up behind, but *not* over the necks of the teeth upon the labial surfaces.

The edge at the necks of the teeth must *not* be covered nor should any more of the platina saddle be covered with wax than is necessary for securely holding the teeth in position during the process of arrangement.

After teeth are "set up" remove them with the platina saddle from the cast; varnish and oil cast for at least half an inch beyond the area covered by the saddle on the labial surface only.

Replace the case upon the cast and pour plaster of Paris over the labial surfaces of the teeth and saddle, and allow this investment to rest upon the cast in such a manner that after investment has hardened, it, with the teeth and saddle, can be readily removed from or accurately replaced upon the cast, as necessary.

When investment is thoroughly hardened, remove all from cast and melt out the wax with boiling water. The platina saddle will become separated from the investment during this procedure.

When all is free from wax, replace upon cast as before.

If the teeth are not held securely in the investment so as to preclude all danger of dislodgment from the jolting which is to follow, wax the incisal edges to the investment.

Varnish and oil that part of the investment which shows the imprint of the wax which originally held the teeth, replace saddle and the investment with the teeth upon the cast, hold securely in proper place and proceed to fill the space between the *ridge-lap* of the teeth and the platina saddle with Jenkins' Prosthetic Porcelain.

Be careful that the porcelain does not remain about the pins, neither must it be any place except that it must completely fill all spaces between the teeth and the space included between the ridge-lap, the investment and the saddle.

The object in filling the aforesaid space with porcelain at this time is that another investment which will soon be made to engage the lingual surfaces of the teeth, the pins and the cast side of the platina saddle, must be prevented from flowing into spaces between and behind the ridge-lap of the teeth, whereby, in the succeeding step, we would be prevented from placing the porcelain where it is very essential for porcelain to be.

When these spaces have been filled with the porcelain body, remove the case from the cast as in previous instances, then, without displacing the saddle, which will adhere to the investment by means of the damp porcelain, cover the lingual and cast side of the case with an investment material known as "Peck's Inlay Investment Compound." This should engage the pins securely together with all other exposed parts of the teeth and saddle and be made thick enough to withstand handling without danger of fracture. (This material becomes nearly as hard as plaster and will not shrink when heated to the limit of the inlay furnace).

Our teeth, saddle and porcelain are now sandwiched between two investments, and when the last one has hardened, the first one must be cut away as one would cut a plaster impression from a cast.

With the plaster investment removed from the case, supported by the second investment, it will be similar in appearance to when it was waxed up in the initial stage, excepting that porcelain will now be seen in place of the wax. Add sufficient porcelain and carve same in the closest possible imitation of nature. Exaggerate the finer detail a little to compensate the shrinkage in firing. Biscuit the case, and after it has cooled fill all cracks and correct other defects caused by shrinkage of the porcelain.

If any building up with new body is necessary, it will be better to biscuit a second or a third time if necessary before applying the final coating of gum-enamel,

At completion of this process cover *evenly* with a layer of gum-enamel in depth not more than one-sixteenth of an inch, place case in furnace for the last time and fuse to a glaze.

After this is done remove the investment, peel platina off or not as you please—I let it remain—remove rough edges with a fine abrasive wheel and mount the section upon a vulcanite base in the usual manner.

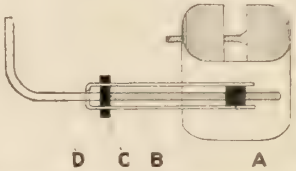
"Prosthetic Porcelain" will endure the process of gold soldering perfectly, so if it should be desired to mount a section upon a gold base, flat back teeth may be substituted for vulcanite and attachments made as in "full solder" dentures.

I would, however, in such cases, prefer to use the continuous gum method of attachment upon a platinum base.

METHOD OF ROTATING MOLARS AND BICUSPIDS.*

BY WILSON G. FOSTER, CINCINNATI, OHIO.

Dr. W. O. Talbot's appliance for rotating molars or bicuspids when in torso-occlusion consists of a U-Shaped iridio-platinum wire the ends of which are soldered on either side of a short arch tube on buccal side of band on tooth to be rotated, a piece of separating rubber being inserted between the expansion arch and the iridio-platinum wire.



A—Arch tube. B—Iridio-platinum wire. C—Separating rubber. D—Expansion arch

---

*Clinic before the Ohio State Dental Society, December, 1905.

THE SHADING OF PORCELAIN TO MATCH THE TOOTH SUBSTANCE BY THE HELP OF THE PYROMETER.*

BY WESTON A. PRICE, CLEVELAND, OHIO.

The method consisted in part of baking a separate button of the mix used for the inlay at the same time as the bake in the matrices. This is stripped from the platinum and compared to the tooth and the mix modified connecting the shade before adding more to the inlay. This is repeated with each addition if the eye can see the possibility of improving the shade. The results are very definite since the pyrometer makes it possible to bake each time to an exact temperature, and hence an exact shade.

SECOND PART OF CLINIC.

What to do with gold crowns: The clinic demonstrated the great superiority of built-up, hand-carved, full porcelain crowns, or part crowns, over any gold crown for all parts of the mouth, chiefly because practically all gold crowns irritate, sooner or later, the tissues about the tooth are less readily kept clean, particularly about or under the margins, and are much less sightly. The porcelain can be made to restore both contour and masticating surface much more correctly, besides more perfectly resisting the wear.

---

*Report of Clinic given before the Ohio State Dental Society, December, 1905.

* * *

METHOD OF CONSTRUCTING ARTICULATED GOLD CROWN.*

BY DR. E. M. MARTINDALE, COLUMBUS, OHIO.

Prepare tooth carefully for band, and fit contoured band as accurately as possible. Place band on tooth and have patient bite into modeling compound, thus getting an impression of the teeth, relatively articulated. Pour up impression and mount on articulator. Varnish or oil opposing teeth, place soft plaster on banded stub, close articulator, and when plaster is set trim off excess plaser, exposing edge of band all the way around.

Carve cusp, articulating it in every required movement. Press carved cusp into moldine far enough to outline the edge of band, make die and counter-die of fusible metal. When cusp is swaged, the band line will be indicated on gold, carefully trim to this line, solder to band and the finishing will be quickly and easily done. Crowns for molars and bicuspids thus constructed will be a satisfaction to both patient and operator.

COHESIVE TIN-FOIL AS A FILLING MATERIAL.

BY GEORGE W. CLAPP, D. D. S., OTTAWA, OHIO.

While the use of tin as a successful filling material dates back nearly a century, its adoption by the profession and its application to those cavities in which it is indicated have never been so general as its merits deserve. Tin has two serious drawbacks which prevent its use in many cavities: it is too soft to withstand mastication and it turns black. These drawbacks limit its use to cavities not exposed to view or occlusion.

To offset the disadvantages of softness and bad color, tin has some very valuable properties in which, so far as I know, it excels all other filling materials. Its softness permits an adaptation to cavity margins, which in many cases it is very difficult to secure with any other filling material. Not only is this true during the process of inserting the filling, but it is true also during the not less important processes of finishing. In proximal cavities the cervical margin is a critical point since perfect adaptation of the filling material to the cavity margin is often very difficult but absolutely essential.

---

*Report of Clinic given before the Ohio State Dental Society, December, 1905.

I am not sufficiently familiar with noncohesive gold-foil to know its value at cervical margins, but cohesive tin-foil excels all other filling materials in this location. Its softness, the manipulation to which it may be subjected without tempering, and the facility with which it may be burnished down after the matrix is removed make possible such an adaptation as I believe no other filling material permits.

In addition to the virtues of softness and adaptability, tin manifests other qualities of no small value. One of these is that it conducts heat, cold and electricity much less readily than gold or amalgam.

This characteristic is of particular value in those cavities in which the use of tin is permissable, that is, in bicuspids and molars. These cavities are frequently large and decay has often removed much of the natural protection of the pulp, leaving it poorly protected against shocks of heat and cold. In filling such cavities care must be taken to protect the pulp, since, if a filling which is a good thermal conductor be inserted without the intervention of some conductive material, pulpitis and abscess are almost sure to follow from thermal shocks. Under such conditions tin is very valuable, since it has low conductive power and is acceptable to the tissues in quite a remarkable way.

I do not know the nature of this acceptability to the tissues, but it is shown by the fact that upon removing old tin fillings the dentine under the tin is found to be not only healthy, but so dense as to almost resist instrumentation. I know of no way of accounting for this save on the supposition that tin stimulates the pulp to a physiological activity whereby the dentine is greatly hardened.

This acceptability to the tissues is shown also by the fact that many vital teeth which are painful under other fillings remain perfectly quiet when the other fillings are replaced with tin.

It is well known that recurrent decay about the well-placed tin filling is rarely seen; the writer has never seen a case.

In mouths where the saliva is habitually acid, recurrent decay is sometimes so persistent as almost to defy the efforts of the dentist to preserve the teeth. It seems to make little difference how perfect fillings are or whether they are composed of gold or silver.

In many such cases dentists have found relief by using of tin to cover all cavity margins, completing the filling with gold or amalgam. It is reported of many such cases that the tin wastes away, but that the tooth structure is not attacked. While this result requires the filling to be replaced in a few years, there are few who would condemn it if it preserved the tooth where all else had failed.

While these characteristics have marked the tins which have hitherto been offered to the dentist, they have been practically offset by the fact that tin is not naturally very cohesive and that such slight powers of cohesion as it possesses when fresh cut disappear very quickly. The tin then becomes strictly noncohesive and must be secured in the cavity by wedging a considerable mass of it into the retaining form. This wedging must be done with heavy pressure. If one of the cavity walls be weak this wedging becomes positively dangerous and is quite apt to result in a check of the weak wall. This fact has had not a little to do with preventing the general use of tin.

Cohesive tin-foil possesses not only the virtues common to all tin, but some virtues peculiar to itself. It is cohesive in the same manner that gold is and welds in the same way. It retains its cohesive properties for several years. It avoids the wedging processes required to adapt the noncohesive tin, and thereby removes much of the danger to frail walls. It permits better adaptation to cervical margins because it is adapted in a more intelligent manner. It saves from one-third to one-half the time required to fill the cervical portions of the cavity with gold. It also saves a very respectable portion of the expense of doing this grade of work. These two points will be taken up in greater detail in the next paper.

So far as I know, but one dentist possesses the secret of making tin-foil cohesive in the same way that gold is, and that man is Dr. H. L. Ambler of Cleveland, O. For nearly 40 years Dr. Ambler has been making this foil. During that time dentists who have been so fortunate as to stumble onto the knowledge of it have profited much thereby. It is a boon to those dentists who have been kept from using tin by the mechanical difficulties heretofore incident to its manipulation.

RICHMOND CROWN.*

BY EDWARD C. MILLS, D. D. S., COLUMBUS, OHIO.

The Richmond crown is evolved from a crown of similar construction, introduced by Dr. C. M. Richmond. Properly constructed it is one of artistic beauty, and well calculated to withstand the strain consequent during mastication, and prevent those fractures which are so often fatal to the usefulness of the root.

It seems only necessary to consider those points in its construction whereby the objections made by many operators are overcome, namely, the difficulty in fitting the bands, the breaking of the pin where it is attached to the crown, and the inartistic appearance of the gold at the gingival margin and cusp.

In preparing the root, trim the labio-cervical portion to the margin of the gum, leaving the linguo-cervical portion of sufficient length that the band may have ample surface for attachment —this being the point of greatest strain. Presuming that the sides of root have been trimmed parallel, prepare band, and, placing in position, trim flush with tooth, extending the cutting at the time of the labio-cervical portion of root and band a trifle below the free edge of gum. As a result, the band will be very narrow where there is slightest strain, and invisible when the crown is finished. With this band construct the cap, using thin pieces of platinum, well annealed. After enlarging the root canal for the reception of the pin, countersink the hole lingually, extending freely to lingual edge of root. Place the cap in position, burnish thoroughly into the countersink portion, force pin through cap at point corresponding with hole in root, cement with wax, invest, and solder, being careful to fill the countersink portion. This not only reinforces the lower portion of the pin, but gives it a strong union in the final soldering, thus overcoming the difficulties which arise when the facing, after ground in position, extends over the end of the pin.

To form an invisible gold cusp, bevel the lingual surface of the facing from near the pins to the cutting edge, swedge a backing, remove, and with gold solder thicken that portion of it corresponding to the bevel on facing sufficiently to serve as a cusp. Replaced in position, the cusp is as invisible as the backing, to both of which the facing forms a veneer. In forming cusps in this manner, coat the backing with a solution of whiting and water, excepting the surface over which the solder is desired to flow; likewise coat the backing in the final adjustment to the facing, and prevent the checking in the final soldering so often caused by solder flowing beneath the backing.

---

*Presented as a Clinic before the Ohio State Dental Society, December, 1905.

In bicuspids the facing thus backed forms the outer cusp, while the inner is formed by swedging a lingual cusp, and waxing it to the backing at a point determined by the antagonizing teeth. The separate inner cusp is of special advantage in meeting a short or long bite, without interfering with length of the buccal cusp, the length of which should be determined by the adjoining teeth.

Plain rubber teeth are well adapted in crowns of this kind. Grind to fit the cap, swedge thin piece of platinum over base and lingual surface through which the pins pass, wax in position on cap. invest and solder.

Logan crowns can be used also: if the cap and pin have been constructed in the usual manner, cut off the Logan pin, and bevel the base of the crown at the palatal border; swedge thin piece of platinum over base, letting stump of the pin protrude; wax to cap, invest and solder.

A Logan crown with pin can be used by setting crown in usual way, then form cap, letting the Logan pin pass through cap into the root—the base of the crown having been beveled and covered with platinum as in the previous case. It is then waxed to cap and soldered, completely filling the space between the crown and cap.

Success with Richmond crown-work depends on the attention given to details. Ignoring these, we resign our efforts to the fate of the pilot, who heeds not the Scylla under his bows, but thinks of the distant dangers of Charybdis.

BRYANT SYSTEM OF ATTACHING PORCELAIN FACINGS WITHOUT REMOVING THE BRIDGE FROM THE MOUTH.*

BY J. HOMER HUSCHART, CINCINNATI, OHIO.

In giving this clinic on the Bryant system of attaching porcelain facings, without removing the bridge from the mouth, I felt that it was a system that every dentist should know something about, because when you need it, you need it very badly, even though you do not have occasion for it often.

The first step of the operation consists in the patient presenting, with the facing cracked off the bridge, and with the platinum pins extending. You now rip off the pins as close as possible with the wire nippers, then, with a small carborundum stone on mandrel, in the dental engine, you grind the remnants of the pins until the backing and pins are even, then you are ready to select the new tooth. After you have done this, place some black wax on the backing from which the tooth originally cracked, with the tooth about in right position; press pins of it (tooth) into wax, carefully remove tooth, and the holes left in the black wax will be a guide for you to start to drill openings for the pins you wish to insert. After you have started to drill the holes, just proceed far enough to tell the spots (after the wax has been removed); you remove the wax completely. Now drill through the backing entirely, starting in the marks made through the black wax, and proceed to grind your tooth to position as regards gum, etc. Having succeeded in grinding tooth in position, you remove tooth and countersink the drill holes from the lingual with the Bryant countersinking instrument. You now proceed to thread the platinum pins, in the tooth, with the instrument for that purpose; after this you are ready to insert the tooth.

First, dry as well as possible the seat of the operation, then take some chloropercha (not too thin), place on the back of the tooth, after which press tooth to position, and with the little nut device for that purpose screw the taps tight. After this has been accomplished you use the small carborundum wheel again to grind the edges of the nuts or taps even with the backing, then use a small dull finishing burr in the engine and sort of burnish, or, in a way, rivet the ends of the platinum pins (which you can easily distinguish from the adjoining gold). By a little pressure in this way, with the finishing burr, you can spread the platinum enough to lock the nuts in their positions; remove excess chloro-percha, which may have been pressed out, and your work is completed.

---

*Report of Clinic before the Ohio State Dental Society, December, 1905.

CLINIC WITH IMPROVED TIN-FOIL.*

Dr. Ambler showed that with his cohesive tin-foil, a filling in any cavity in any tooth could be made one solid mass from base to surface, so that if the filling was removed by breaking the tooth, it could be put on an anvil and forged out without breaking in pieces. After partly filling a cavity, he burnished the surface, then built on more tin so firmly that it could not be pried off. This foil is more tenacious, more cohesive, and makes a harder filling than any similar foil. It is used entirely for technic work in some dental colleges in place of cohesive gold, because it teaches the use of tin and cohesive gold at the same time, as the tin is manipulated with the same instruments and hand mallet used for cohesive gold foil.

---

*Clinic given before the Ohio State Dental Society, December, 1905.

SUGGESTIONS

TAKING LOWER IMPRESSIONS.

C. H. Pearce.

A simple but successful way to obtain a plaster impression of the lower ridge is accomplished as follows: Mix the plaster to the consistency of cream, hold the cheeks and tongue out of the way, and with a spoon pour the plaster along the ridge, allowing it to run well under and over the ridge. Take your tray filled about two-thirds with plaster and place it into position in the mouth, using only a very light pressure to avoid displacing the muscles and tissue. Remove when hard.

This method is especially effective where the six front teeth are remaining in the mouth, as no special tray is required. Just fill in over the ridge first good and full with the soft plaster, then introduce the moderately filled tray, using little or no pressure. If undercuts, allow impression to break and replace the pieces.

With this method the muscles are not pressed out of their normal position, thus we obtain a more perfect impression with less liability of having to trim our plate when finished.—*Pacific Dental Gazette.*

A SIMPLE PROTECTOR FOR THE HOT-AIR SYRINGE.

F. C. Brush.

The metal portion or end of the syringe may be covered with a piece of white rubber tubing of the same diameter; the tubing to be about an inch shorter than the metal end. When in use, the tubing is to be drawn up on the metal toward the bulb, exposing the tip for heating, after which the tubing is pushed out so as to cover the point, thus confining the heat, and, being a non-conductor, effectually preventing the burning of the lips or mucous tissue. *Dental Brief.*

GOLD INLAYS IN ABRADED SURFACES.

H. B. Harrell, Gainesville, Tex.

My first experience was with the abraded, saucer-shaped, grinding surfaces that had become very sensitive. I am governed by the conditions in deciding whether I make any further preparation than the depredation has made. If I find the concave surface extending over the whole grinding surface I make little or no change; but if not, I sometimes extend it over the parts that are liable to be affected by abrasion. I select some three or four points near the enamel line, and with a round bur of good size, I make slight countersinks, extending them toward the center, or deeper part of the cavity. I take an impression of the surface with plaster or cement, into which I run a Melott's metal die. I drive this die into a piece of lead for a counter, and between these I swage a thin piece of platinum plate (as thin as I can roll it). I take a small spear-pointed drill and drill a small hole in each of these countersinks (in natural tooth), about 1-16th inch deep; place the swaged platinum in place on tooth and make a small puncture through platinum into each hole. Shove a small platinum pin through each of the punctures to the bottom of the hole. Press over these a softened piece of hard wax and remove all together. Set the pins and exposed platinum surface in a little investment, and when set melt out wax and flow pure gold around the pins—I use for pins tooth-pins with one head filed off. To make sure of a perfect fit, remove the piece from the investment, replace it on the tooth and press and burnish it to a perfect adaptation, especially at the margins. Place on another bit of wax, remove and invest as before and flow the cusp of 22-karat gold. It is then ready to set with cement and finish.

The first one that I made stands today like a monument in a worn-out set of teeth. This case came to me some 12 or 14 years ago with all the teeth in fair condition except this one, which was abraded and so sensitive over the surface where I placed the inlay that he said he could not chew on that side and wanted the tooth extracted. His teeth have had no care since. I asked him today if he ever cleaned his teeth, and he said that he sometimes chewed a little gum. Since that time I have made fillings in about the same way on almost, if not all, the different surfaces of the different teeth, with uniform good results. I fill all deep cavities with cement and remove the amount of cement that I want to replace with gold and proceed to make the inlay about as described, building up in my matrix the walls and corners as I want them with hard wax, and incase this with a strip of thin platinum; remove all together, invest, melt out wax and flow the box full of gold, partly finish, then set with cement and finish.

The finishing of filling removes the exposed platinum. You cannot detect in the finished filling the line of platinum matrix nor any line of cement if the work has been properly done. The reason why I use platinum for my matrix is that I can make the fillings for the front part of the mouth of pure gold, and another is, there is no danger of melting your matrix; another is, if a little gold should flow on the impression surface it would spoil the possibility of a fit, but with platinum you can cover the rest of gold surfaces with wax and drop it in a little *aqua regia* and warm it up a little (not enough to melt the wax), and in a few moments the gold is gone and the surface is as perfect as ever. After making your filling for deep cavities, remove the cement and re-fill with cement, setting the inlay in the fresh cement and finish. You then have virtually a cement filling with an indestructible gold covering.—*Items of Interest.*

OCCLUSION FOR BRIDGES.

S. H. Voyles, St. Louis, Mo.

In studying occlusion for a bridge, we must remember that the life of the bridge is the life of its weakest anchorage. In a bridge supported by two teeth, one a multi-rooted and the other a single-rooted, both in the same condition of health, if forces of mastication bear equally on each tooth, the single-rooted one will loosen first, even if the force were not applied at an angle to the long axis, as it usually is in single-rooted teeth. Hence, it follows that if you favor that tooth at the expense of the other in the arrangement of occluding surfaces, you will have increased the reasonable life of the appliance. We must bear in mind the several different phases of masticatory force.—*Dental Brief.*

AN EXCELLENT BRACKET TABLE COVER.

C. F. Graham, St. John.

Last, but not least, in re-covering your bracket table use ordinary upholstering leather in some dark maroon shade, and you will find it durable, neat, and, above all, cleanly, a quality the usual covering lacks decidedly.—*Dominion Dental Journal.*

TO SHARPEN A LATHE CONE.

C. F. Graham, St. John.

If there is one thing more than another that is prone to cause profanity in the laboratory, it is the slipping and squeaking of brush wheels on a dull or threadless lathe cone, and the remedy is so simple that the only wonder is why one did not think of it before. Run the lathe toward you and hold an ordinary file or fine vulcanite file firmly upon the thread and let it travel up the cone and repeat. One minute's work will make it as good as new.—*Dominion Dental Journal.*

TO SET PLASTER OF PARIS PROMPTLY.

C. F. Graham, St. John.

A small amount of plaster scraped from an old cast is the king of methods to facilitate the setting of plaster.—*Dominion Dental Journal.*

PARTIAL LOWER DENTURES.

L. P. Haskell, Chicago.

The great trouble with these cases is their liability to break. This can be obviated by a reinforcement of gold, as follows:

After waxing up the case, having it thin as possible, make a pattern of lead or tin, about one-quarter inch wide, extending past all open spaces. Using clasp gold 26 gauge, shape it with fingers and pliers to the wax surface. Platinum loops can be soldered to the inner surface to hold the gold to the rubber, or what is easier, punch loops with the loop punch which is used on aluminum plates.

To hold this gold in place while packing the rubber, solder a strip of metal of any kind to the lingual surface. This holds the gold to the plaster and is to be cut off in finishing.

It should be borne in mind that the common habit of extending these partial lower plates no higher than the necks of the teeth is very objectionable for several reasons. First, the partial lower plate is constantly settling as the process recedes, worse than in the upper jaw. As it thus settles, the points of vulcanite denude the necks of the teeth and cause serious irritation. In the second place, as a rule, the lower denture has to be worn narrow on the lingual side, especially over the frenum, making a weak plate. In the third place, the plate is worn with more comfort if extended up over the necks of the teeth. Of course, if the patient feels pressure upon any tooth it should be relieved, always calling attention to it when inserting the denture.

It is a good plan to use a clasp on a tooth, and one is all that is needed. The best clasp for this work is made of wire. Using 18-gauge wire, an inch and three-quarters long, double it with the pliers not quite close together. Fit it to the labial surface and side, then bending the ends at right angle to be imbedded in the rubber. This should be fitted before arranging the teeth, then lay aside, arrange the teeth and wax up the case, leaving room for the clasp, and taking it in the pliers, heat and drop into place and cover the ends.

To be sure that the clasp is not moved in packing the rubber, cut away part of the plaster tooth, wet it thoroughly, and cover with plaster all the clasp in sight, leaving the plaster in such shape that it will draw from the opposite flask. Here is the very best clasp for partial lower plates, easily made and adjusted and cleaner than the gold band.

Too much stress can not be laid upon making the lingual sides of lower plates so narrow as not to be lifted by the muscles, glands and loose integuments. This is very largely overlooked by dentists and causes the patient much trouble. The patient should be reminded that the lower denture is more liable to cause irritation of the membrane than an upper denture, but can and should always be relieved at once.—*Dentist's Magazine.*

IMMEDIATE ROOT-FILLING NOT ADVISABLE.

S. M. Weaver, Cleveland, O.

Never fill a root canal at the same sitting after the removal of a pulp with cocaine, particularly when adrenalin is combined with the solution. First, because of the secondary hemorrhage, and, second, the tissue surrounding the apical space being anaesthetized renders it impossible to work with the same degree of accuracy as when this space is sensitive, especially when forcing in the root-filling. Take, for example, a bridge that is to be swung from the second upper molar to the first bicuspid, and, as in many cases, the molar is perfectly sound, we all know that to dress it down *perfectly,* without a great deal of pain, has been an *impossibility,* and the result is seen every day, by the worst kind of ill-fitted crowns, causing the condemnation of bridge-work, instead of the condemnation of the operator, and really it was not the operator's fault, but the physical impossibility of the patient to endure the pain. It is not necessary now.

The end of one of the cusps is ground off, exposing the dentine. This can be done without a particle of pain, if good, true, carborundum stones are used with plenty of hot water. After this is accomplished, drill with a one-half bur directly towards the pulp until sensitive dentine is reached. Then apply the high pressure for about 20 seconds, which is generally sufficient in a healthy tooth. You will now be able to grind as much as you like without any pain to the patient, performing your work thoroughly and much easier, saying nothing of the time saved. After thoroughly trimming the abutment, if the pit has been ground out, make another in the same place and dismiss the patient.

We all know how sensitive these abutments are after they have been ground down for two or three days, as is generally necessary while constructing large bridges. Ordinarily, the patient suffers severe pain during the fitting on account of the hypersensitiveness, and when air is applied to dry the abutment, followed by the action of the phosphoric acid in the cement, the pain is terrific. This operation generally taxes the limit of endurance in both patient and operator, but let us look at it from a more humanitarian standpoint. The tooth has been dressed down without pain, the pit was drilled while the tooth was anaesthetized, and all there is to do is to insert the needle of the high pressure in the pit already made and inject until desensitized, which is readily ascertained by having your assistant blow a little cold air on the tooth, and the patient will do the rest. By this method a minimum of pain has been caused, and the rest of the operation, such as fitting, drying the abutment, and cementing in place is accomplished without a particle of pain. Operators who have experienced this pleasure and satisfaction could not be made to discard it at any cost, and your patient will go out of the office pleased and gratified instead of being a physical wreck, and dreading the time when he will have to come again.—*Dentists' Magazine.*

HOW TO MAKE A RIGHT AND LEFT LOWER PARTIAL TRAY.

C. Wesley Sufpin.

Take an ordinary flat-bottom tray and with a hack-saw cut midway through the handle. This makes two good partials at the expense of one.—*Dental Brief.*

CARVING-WAX FOR CROWN AND BRIDGE WORK, AND OTHER USES.

C. Boyd Powell, Jacksonville, Ill.

Take pink, base plate gutta percha, one sheet, and one sheet of pink paraffin and wax, the same as that used for waxing base plates. Melt the wax *with dry heat* and then put the gutta percha in and stir until the gutta percha is melted, then pour out onto a plate and let cool. The common beeswax makes just as good a product, only the color is lighter. Be sure and *use dry heat for this.* Keep at a high temperature all the time; if it takes fire blow it out. The best vessel I find for melting it is a granite dipper with a long handle, stirring with a steel spatula until the gutta percha is melted. This material is to take the place of modeling compound and plaster in crown, bridge and gold inlay work. It carves nicely and smoothly without chipping or flaking. If you trim off a little too much, just warm a shaving and stick it on with a warm knife-blade; burnish it down. The blade for carving with should be warmed just a little to make it cut smoothly.—*Dental Brief.*

A METHOD OF MAKING CLASPS.

W. D. Easton, Philadelphia, Pa.

Take a piece of platinum-gold wire about No. 17 gauge, and with a pair of pliers bend like a hairpin, and then press the wire together from where the bend is first made until contact is secured for about 5-16 of an inch. Unite with solder. Now with the pliers bend to fit the tooth, carrying one end of the wire down to be embedded in the wax over the ridge and the other end to be bent so as to be embedded in the opposite direction. Hammer out the two ends until they are slightly flattened, and roughen each arm of the wire with a file so the clasp will be firmly held in the vulcanite.—*Items of Interest.*

GOLD INLAYS FOR MOLARS AND BICUSPIDS.

Thos. P. Hinman, Atlanta, Ga.

Gold inlays are a most excellent substitute for gold crowns in molars and bicuspids where the teeth are very badly broken down, and it is inevitable that their introduction and use in the hands of conscientious and skilful operators will prove a boon to mankind and a stimulus to the cosmetic in dentistry.—*Items of Interest.*

EDITORIAL

A WORTHY CAUSE.

As the May Dental Summary was in press at the time San Francisco was stricken, we could not get the following appeal in that issue, but trust that it is not yet too late to remind our readers of their duty toward their brother dentists who suffered from the earthquake and holocaust, April 18th.

The offices and equipments of over 400 dentists destroyed in a day is sad to think about. And this is not the only loss to the San Francisco dentists, for their practices are, for the present at least, virtually ruined. What a loss this means to our afflicted brothers, and how timely a generous fund would be. Every dental society in the land, and every dentist should quickly respond and contribute toward a fund for these sufferers. A wait for new office rooms, new equipment to secure, months before a practice can be resumed, is in store for every dentist of San Francisco.

Let your contributions be liberal for the worthy cause of helping your brothers in distress. Dr. J. D. Patterson, Kansas City, Mo., has agreed to act as national treasurer, and all funds sent to him will be cared for and turned over to the proper authorities in San Francisco for distribution to the dentists of that city.

Since the above hastily-written appeal was prepared for the May Summary, the relief work has been taken up all over the United States. District and local society members have responded liberally, and their committees have been, and are still at work soliciting for the fund.

Chicago dentists, while the ruins of San Francisco were still smouldering, took the first step toward raising a relief fund. At their meeting they named a committee of representative San Francisco dentists to take charge of the contributions: Drs. L. L. Dunbar, William Sharp, James Sharp, Harry P. Carlton, L. Van Orden, A. E. Baer, and J. C. Post. Dr. John S. Marshall was subsequently added and made chairman of the local committee.

In order to systematize the relief work as rapidly as possible, the editors of *The Dental Cosmos* and *Items of Interest* suggested as a national committee for the relief work, Drs. V. E. Turner, Raleigh, N. C.; G. V. Black, Chicago; James Truman, Philadelphia, and J. D. Patterson of Kansas City. This committee was approved by local committees, and Dr. Patterson was made treasurer of the national committee.

The work of organization and soliciting in every section of the country has been rapidly carried on and the dentists have responded liberally. At the time we write the fund raised in Chicago amounts to about $5,000; New York, Dr. Ottolengui's "Items fund," $5,000; Boston, the personal offerings (not including society donations) amounts to over $1,000. In his letter Dr. Dowsley adds: "I was much touched the other day upon receiving $50 from the student body of Tuft's College Dental school, and it is their desire that this should be used for the benefit of their fellow-students of California. This contribution was made before any appeal went out, which makes the action all the more appreciative."

Replies from inquiries as to the amount raised in Philadelphia, Baltimore, Cleveland, St. Louis, Cincinnati, Pittsburgh, etc., are to the effect that the good work is progressing, but it is yet too early to even estimate what the fund will amount to in these cities.

In the smaller cities and towns the work is going on, and if every dentist does his duty the fund accumulated for the suffering dentists of San Francisco will reflect credit on American dentists for their philanthropic spirit and generosity toward their afflicted brothers.

A PUBLIC DENTAL LIBRARY.

The library board of the new Carnegie library, Columbus, O., have consented to give space to the dentists for a dental library and reading room. Here is an opportunity to build one of the best dental libraries in the country, and not alone for Columbus dentists, but for the benefit of dentists generally throughout the state, as everyone will be welcome. All the dental literature possible will be kept in the library, making it one of great value for reference.

Columbus being centrally located and easy of access by so many dentists, it would seem to be an ideal location for a general dental library.

The building is still under construction, but will be ready for occupancy by fall, and already the dental committee is looking about to ascertain what may be depended on in the way of contributions of books or journals. Every book contributed will be inscribed with the name of the donor, and it will remain thus recorded in the library.

If any of our readers have books or journals they would like to contribute they will confer a favor by sending titles to either Dr. W. H. Todd or Dr. E. C. Mills, Columbus, O., members of the dental library committee.

SOCIETY

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. D., beginning July 31st, at 1:30 p. m., and continuing through the days of August 1st and 2nd. All persons wishing to take the examination must send in the examination fee of $10 before July 24th. Candidates must bring operating instruments, including dental engine, and such other appliances and materials as are necessary to do crown and bridge-work.

G. W. Collins, *Secretary,*
Vermillion, S. D.

MICHIGAN STATE DENTAL ASSOCIATION.

The semi-centennial meeting of the Michigan State Dental association will be held in Detroit, July 9, 10, 11, 1906. A most cordial invitation is extended to all reputable practitioners to attend this fiftieth anniversary of the association, and a most interesting program is in preparation to celebrate this important occasion.

Edward B. Spalding, *Secretary.*

WISCONSIN STATE DENTAL SOCIETY.

The thirty-sixth annual meeting of the Wisconsin State Dental society will be held at Madison, Wis., July 17, 18 and 19, 1906. The program committee is arranging an unusually interesting program. Some of the most eminent men in the profession will be with us, and all indications point to one of the best meetings ever held in Wisconsin. All ethical dentists are most cordially invited to attend.

W. H. Mueller, *Secretary*
21 W. Main Street,
Madison, Wis.

"F. D. I." INTERNATIONAL DENTAL FEDERATION.

PRELIMINARY NOTICE.

The next annual meeting of the Federation Dentaire Internationale will be held in Geneva, Switzerland, August 8 and 9, 1906. By direction of Dr. W. D. Miller, its president, and upon the authority of the executive council the meeting will be a general one, at which all members of the F. D. I. and those eligible for membership who may be interested in the work and purposes of the federation are invited to be present.

The meeting will be inaugurated by an open general session, at which the address of the president, together with the reports of the several officers, will be read and discussed, and at which time also the detailed program of the succeeding sessions will be announced.

The work of the several commissions already established by the F. D. I. will be reported upon and elaborated in meetings following the general opening session.

The commission of education will report upon the progress of its work toward perfecting a curriculum of studies to be recommended for adoption in the dental educational institutions of the various countries, and seek to establish means for the regular interchange of reports among the schools upon this important question.

The commission on hygiene will report upon the question of dental hygiene in relation to the public service, and particularly upon the promotion of systematic dental service in the armies and navies of the world.

The commisison on international dental press will consider the means for establishing an International Dental Review, so as to bring into closer relation the records of dental science and art, as well as of professional progress among the several countries of the world.

The commission on dental jurisprudence and the commission on dental history will present for consideration the plans which in each case have been prepared for the prosecution of their work.

The various suggestions brought out in the discussions of the commissions will be further considered and finally acted upon at the general session with which the meeting will close.

Papers upon the various important topics which comprise the work of the federation will be read before the meetings of the commission to which they directly relate.

The Geneva meeting promises to be the most important reunion which has been held, and its results will exert a far-reaching influence upon the progress of dentistry for the coming year at least. The social side of the meeting is already an assured success. The attractions of Switzerland are too well known to need favorable comment. Our colleagues of the little sister republic are exerting every effort to create a new standard of hospitality in the entertainment of F. D. I. delegates, so that as a combination of vacation recreation and professional social intercourse, with the opportunity to take part in a most important movement for the uplifting of our profession both in an international and a national way, the Geneva meeting affords a rare opportunity. Let everyone who can do so contribute by his presence to the success of this great meeting.

EDWARD C. KIRK, *Secretary-General.*

WEST VIRGINIA STATE BOARD OF DENTAL EXAMINERS.

The West Virginia State Board of Dental Examiners will hold their next examination in Charleston, June 6, 7, 8, 1906.

For further information address the secretary,

Dr. H. M. Van Voorhis,
Morgantown, W. Va.

INTERSTATE DENTAL FRATERNITY.

The annual meeting of the Interstate Dental fraternity will be held at the New Kimball house, Atlanta, Ga., on Monday, September 17, 1906.

The meeting and banquet will be in charge of Dr. Frank Holland, the vice-president for Georgia. Dr. Holland's well-established reputation as a host is a sufficient guarantee for a royal good time for all the fraternity who can arrange to get there. Do not miss it.

R. M. Sanger, *National Secretary.*

PSI OMEGA FRATERNITY.

All members of the Psi Omega fraternity attending the meeting of the Pennsylvania State Dental society, Bellevue-Stratford, Philadelphia, June 27-29 are cordially invited to attend a reunion dinner to be held under the auspices of the Philadelphia Alumni chapter. Details at the meeting.

J. Arthur Standen, *Chairman,*
1220 Locust St., Philadelphia, Pa.

J. Ellis Nyce,
2320 S. Broad St.
H. L. Chandler,
817 S. 49th St.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners for examination of candidates for license to practice dentistry in Wisconsin will be held in Milwaukee, June 18, 1906, at the Wisconsin College of Physicians and Surgeons, Milwaukee.

Application must be made to the secretary 15 days before examination. The candidate must be a graduate of a reputable dental college, or have been engaged in the reputable practice of dentistry for four consecutive years, or an apprentice to a reputable dentist for five years. For further particulars apply to

J. J. Wright, *Secretary,*
1218 Wells Bldg., Milwaukee, Wis.

NEW JERSEY STATE DENTAL SOCIETY.

The thirty-sixth annual meeting of the New Jersey State Dental society will be held in the Auditorium at Asbury Park, N. J., on Wednesday, July 18th, to the 21st.

Accommodations can be secured at Hotel Columbia, with a rate of $3 per day, two in a room, and $3.50 per day, one person in a room.

A smoker will be given the members, guests and exhibitors on Thursday evening, at 10:30.

Many new demonstrations, clinic and instructive papers, the great feature of this meeting. Over 800 dentists registered last year.

The Pennsylvania and Central railways of New Jersey carries passengers from all points to Asbury Park.

Asbury Park is a splendid place on the seashore to spend your vacation, and the State Dental society for the best instructions to help you in your work throughout the year. Cut off your appointments from the 18th to the 21st. Come and see for yourself.

Charles A. Meeker, D. D. S., *Sec'y*,
29 Fulton St., Newark, N. J.

COMMENCEMENTS.

Southern Dental college, May 2d, graduates 31.
Atlanta Dental college, May 2d, graduates 47.
Birmingham Dental college, April 30th, graduates 4.
Cincinnati College of Dental Surgery, May 3d, graduates 7.
Ohio Medical University Dental college, May 8th, graduates 20.
Vanderbilt University Dental department, May 9th, graduates 28.
University of Maryland Dental department, May 10th, graduates 42.
Kansas City Dental college, May 9th, graduates 27.
Louisville College of Dentistry, May 9th, graduates 40.
Western Dental college, May 8th, graduates 39.
Colorado College of Dental Surgery, May 17th, graduates 13.
Ohio College of Dental Surgery, May 10th, graduates 29.

SOUTH DAKOTA STATE DENTAL SOCIETY.

The South Dakota State Dental society will hold its next regular meeting June 12, 13 and 14, 1906, in Vermillion, S. D.

W. F. Price, *Secretary*.
Vermillion, S. D.

AFTERMATH

Connecticut Examining Board at its recent examination passed 41 out of 82 applicants.

Abscessed Tooth Caused Lockjaw.—A farmer living near Houston, Tex., died from lockjaw, caused by an abscessed tooth.

Will Specialize.—Dr. Walter H. Ellis, Buffalo, N. Y., is now located at 403 Delaware avenue, and has limited his practice to orthodontia.

Killed at San Francisco.—Word has been received at Newark, O., of the death of Dr. De Crow, a brother of the late Dr. De Crow of that city.

Recreation Day.—The dentists of Elyria, by mutual agreement, will close their offices every Wednesday afternoon from 12 to 6 o'clock, from May 1 to October 1, 1906.

Dentist Killed on Hunting Trip.—Dr. E. L. Kiser of Quasqueton, Ia., while hunting up the river, accidentally shot himself in the abdomen, and died soon after. Dr. Kiser leaves a wife and one child.

Columbus (O.) Dental Society.—Officers were elected at the banquet of the society as follows: President, Dr. H. C. Brown; vice-president, Dr. L. P. Bethel; secretary, Dr. R. R. Smith; treasurer, Dr. W. B. Kiger.

Pioneer Dentist Will Resume Practice.—Dr. A. W. Palmer of Chattanooga, Tenn., will resume his practice of dentistry. Owing to illness he was forced to abandon his office work several years ago, but is now fully recovered.

Odontological Society of Western Pennsylvania.—The following officers for the ensuing year were elected: President, Dr. W. H. Haines, Pittsburg; vice-president, Dr. H. H. Harrison, Wheeling; secretary, Dr. B. M. Loar, Dr. J. A. Libbey was re-elected treasurer.

Eastern Indiana Dental Association.—Officers elected for ensuing year are: C. B. Meckel of Anderson, president; H. M. Brown of Elwood, vice-president, and Charles Kneise of Cambridge City, secretary and treasurer. The meeting next year will be held in Anderson.

Dentist and Assistant Fined.—In the court of criminal correction Dr. J. H. Case, a dentist of Rochester, N. Y., was convicted on a charge of employing an unlicensed dentist in his office. He was fined $50. The unlicensed assistant, W. H. Beck, was also fined $50. Both paid the fines and the costs.

Dental Meetings Indefinitely Postponed.—Dr. W. J. Taylor, president of the California State Dental association, announces that the state dental clinic which was to have been held in San Francisco May 14th to May 18th, by the association and the California Dental alumni, has been indefinitely postponed.

New Dental Examiner Named.—Governor Frank Frantz has announced the appointment of Dr. Fred C. Seids of Perry as a member of the dental examining board, succeeding Dr. Fred D. Sparks of Ponca City, resigned. The appointment took effect April 1. Dr. Sparks, who retires, drafted the bill which created the dental board.

Iowa State Dental Society.—Officers elected for ensuing year are as follows: President, W. M. Finn, Cedar Rapids; vice-president, C. E. Woodbury, Council Bluffs; secretary, C. L. Topliss, Decorah; treasurer, G. W. Slinglfuff, Burlington; ex-council, W. G. Crandell, Spencer; F. W. Connover, Decorah; H. F. Eschtermacht, Marshalltown.

Died From Effects of Chloroform.—Mrs. Anton Williamson died in the chair of a dentist in Osage, Ia., April 4, after chloroform had been administered for extraction of teeth. One tooth had been extracted when the heart ceased beating. Upon reviving she complained of pain, and again losing consciousness, died before a physician could reach her.

Dentist Saves Child and Mother from Fire.—The home of Dr. W. W. Gardiner at Webster Groves, Mo., was recently destroyed by fire. Dr. Gardiner rescued his mother and child by lowering them on a rope of bed clothes from a second-story porch. The total loss is estimated at $6,500, including house, valued at $2,500, and many valuable books and paintings. Dr. G. practices in St. Louis.

Dentist Blameless for Death of Woman.—The coroner's jury exonerated Dentist Adam Carlson and Dr. Frank D. Bullard from all blame in the case of Miss Ida Larson, who died while having a tooth pulled in Dr. Carlson's office. The jury, after weighing the evidence and hearing the testimony of both the dentist and the doctor who administered the anaesthetic, found that the cause of death was "shock."

Illinois State Dental Society.—Officers elected are: Dr. Elgin McWhinney of Chicago, as president for the ensuing year. Dr. Thomas P. Dolelin of Springfield was unanimously chosen vice-president. Dr. A. D. Black of Chicago was made secretary and Dr. C. P. Pruyn of Chicago, treasurer.

Deaths.—Dr. B. F. Schuyler of Rochester, N. Y., died April 25 of heart disease, aged 59 years. Dr. S. M. Hart of Marietta, O., died March 31, aged 70 years. Dr. Otis M. Rice of Chelsea, Vt. Dr. Joseph L. Perkins of St. Johnsburg, Vt., died of heart failure. Dr. H. R. Dahman of Jacksonville, Ill., died April 3 of appendicitis, aged 26 years. Dr. H. F. Bryant of Boone, Ia., died from typhoid fever, following acute indigestion. Dr. E. Lee, a dentist, died at the poor farm near Independence.

History of Dentistry.—Dr. V. Guerini, of Naples, Italy, has written a history of dentistry from its beginning down to the beginning of the nineteenth century, and it has been translated and will be published in English if 700 subscribers can be had to pay the expense of publication. It will be a book of 500 pages and will cost $5. If you want to help out a worthy cause and get an invaluable book, write to Dr. Charles S. Butler of Buffalo, N. Y., and specify your intention of taking a copy when it shall be published.

Dentist Heir to Large Estate.—Methods of procedure to recover a title of earl in England, $65,000,000 in real estate, and a large sum of money that has been used by the government of England for several centuries, are now being considered by the descendants of Earl Allen Bathurst, one of whom is Dr. J. W. Carter of Altoona, Pa. The Bathurst earldom still exists, but the rightful owners of the title are now full-blooded Americans. Over 400 descendants are now surviving, large numbers of them residing in America.

Marriages.—Dr. V. M. Thompson of Bellefontaine, O., was married in Cincinnati, April 16, to Miss Florence Hovey of Urbana. Dr. William Bumgarner, formerly of Pittsburg, was married to Miss Agnes Parks of Fairmount, Md. Dr. Cliff Brown of Emerson, Neb., and Miss Laura Nieland of Wayne, Neb., were married at Wayne, April 4. Dr. George B. Bleiler and Miss Rose Schaefer of Reading, Pa., were married in that city April 14. Dr. John N. Wigginton of Waukesha, Wis., was married to Miss Florence Kerr of Alpena, Mich., April 18.

Half Dollar Worth $500.—Because a conductor on an Ogden avenue car declared a 50-cent piece, offered him as fare, to be counterfeit, Richard J. McClevey, a dentist, will be given $500 by the receivers of the Chicago Union Traction company. Judge Ball, in the appellate court affirmed a verdict for $500 returned last summer in favor of the dentist. In its decision the upper court says: "The principle laid down in this case is that the insult and humiliation suffered by the passenger are actual damages, for which a recovery can be had in a proper action."

Municipal Dentistry for City of Cleveland.—The city will add dentistry to the benefactions it gives the poor. Within a fortnight a dental chair will be established in connection with the outdoor relief work of the city infirmary. The city will buy all the material and equipment. The work will be furnished by the Cleveland Dental association, and 1,500 children, whose parents receive aid from the city, will be entitled to free treatment. The reason given for the innovation is that the digestion, and consequently the health, of the children will be improved by good teeth.—Daily Paper

Brazil Said to be a Good Field for Dentists.—Dr. Maria Antoinetta Ghekiere, the only woman dentist in Rio de Janeiro, Brazil, has recently been in New York. According to Mrs. Ghekiere's statement, Brazil is a great field for dentists. There are only a few there. and the prices paid are extremely high. For extracting a tooth Mrs. Ghekiere charges $6.50, without gas, and not less than $50 with gas. An ordinary gold filling costs $10 to $12, gold crown about $50. Mrs. Gherkiere is traveling partly for pleasure, partly tostudy American methods of dentistry. She intends to spend the summer in Europe.

Dr. L. P. Haskell Banqueted.—The Chicago Odontographic society, on May 15th, gave a complimentary dinner in honor of Dr. L. P. Haskell and of the occasion of his 80th birthday anniversary. Dr. Haskell has been in continuous practice in Chicago since 1857, and his long and honorable professional career merits recognition by the dentists of Chicago. Dr. C. N. Johnson gave a literary treat entitled "The Larger Vision," and toasts were responded to by Drs. L. P. Haskell, G. V. Black, J. E. Nyman, J. P. Buckley, and others. Music and other entertainment features were interspersed. The society has 750 members.

No More Electioneering.—Members of the Iowa State Dental society will hereafter refuse to electioneer for candidates for membership on the state dental board, or take an active part in such contests, says the Des Moines Register-Leader. This was embodied in a resolution which passed unanimously, after much discussion, at their recent meeting. The sentiment of the convention seemed to be that it was poor professional policy for a practicing dentist to become involved in any contest for board memberships, and that it might eventually result in serious embarrassments for both the dentist and the board member. Heretofore such embarrassments have occurred and the judgment of the members seemed to be that it was best to stay out of board membership politics.

Order Regulating Dentists in Tamatave.—Consul Hunt, at Tamatave, reports, under date of January 26, that he has been informed by the new governor-general of Madagascar that under the laws now in force no dentists, whatever be their nationality, will be permitted to practice their profession in that colony who do not have a diploma from a French dental school. This ruling by the present governor-general, the consul states, is in direct opposition to a ruling by his predecessor, who, in a note to the consul dated April 19, 1902, stated that the requirement would be waived in favor of a well-qualified American dentist who might wish to establish himself in Madagascar. Consul Hunt reported the ruling of 1892, the substance of which was published in reports, December 9, 1902.

Burglaries.—The office of Dr. G. Abernathy at Ardmore, I. T., was entered and $190 worth of gold stolen. Burglars entered the office of Dr. A. F. Gordon of Lansing, Mich., stealing to the amount of $50. The office of Dr. A. S. MacDougal at Brooklyn, N. Y., was robbed of instruments, gold for filling and teeth amounting to $163. Dental goods amounting to over $30 were stolen from the office of Dr. Hirschi of Guthrie, Okla. Gold for filling to the amount of several hundred dollars' worth was taken from the office of Dr. Pendleton at Norman, Okla. The dental rooms of Dr. Geo. E. Dow of Portland, Me., were broken into and false teeth to the number of 5,000 were stolen, the value of which was $400. Fifty dollars' worth of false teeth and crowns were stolen from a showcase in the office of Dr. E. J. Miller, a duplicate key having been used to effect entrance. The office of Dr. E. E. Sulsberger of Bellaire, O., was broken into. The loss of gold, dentist's materials and tools is estimated at $25. Dr. M. W. Pearson, St. Louis, May 2nd, material worth $40.

Insane Dentist Creates a Panic.—M. Labourrayes, a dentist of North Adams, Mass., was found insane and sent to the Salpetriere for observation and treatment. The secretary of one of the deputies entered Labourraye's dental office to have a tooth extracted which had caused him considerable pain. The dentist asked the patient to sit in the operating chair, and then, drawing a revolver and pointing it at the frightened secretary, whose toothache disappeared as by magic, exclaimed: "If you move a muscle while I am taking out your teeth, you are a dead man." The maniac then proceeded to pull the secretary's teeth. One after the other he removed with great skill, while the patient lay motionless in the chair. When eight teeth had been pulled out, the dentist said: "That will do for today. You have been very quiet. Fifteen francs, please!" The secretary paid without hesitation and staggered out of the office. He went to the nearest police station and told his story. A force of police was sent, and when they entered the room, the madman opened fire on them. He shot one of the policemen in the arm, and another in the leg before he could be knocked down and handcuffed.

Dentists Fined for Practicing Without a License.—Dr. H. M. VanVoorhis, secretary of the State Board of Dental Examiners, who has been attending to prosecutions of violators of the dental law of West Virginia, has just gained a verdict in the circuit court rendered by Judge Reynolds in Tucker county, against Dr. R. R. McVettie, Dr. O. A. Miller, and Dr. Jack McVettie, for practicing dentistry without a license, as the law provides. They all pleaded guilty, and as it was their first offense, Judge Reynolds let them off with a minimum penalty. The statute prescribes that any person, "upon conviction, shall be fined not less than $50 nor more than $200, or confined in the county jail not less than three months, or both, for each and every offense." Judge Reynolds stated that the penalty for the second offense would be much more severe than the first. The McVetties and Miller were indicted on two counts by the grand jury of Tucker county, the second indictment being held open in each case as a guarantee for good behavior in the future. These men held diplomas from dental colleges, and licenses to practice dentistry in other states, but these were no protection to them against the violation of the laws regulating the practice of dentistry in West Virginia. Cases against dentists in other counties are pending.

Professor W. D. Miller, Receives a Grand Reception in Italy.—The following account of Professor Miller's visit to Italy appeared in the Naples Daily Matins: On March 30th, at the 18th hour, the celebrated Prof. Miller of the Berlin university arrived. He is very well known in the scientifical world for his very important researches in dental pathology. He is nowadays the most eminent representative of the international dentistry class, therefore several dentists of Naples went to receive Dr. Miller at the station. On the 3d inst. Chevalier Guerini gave a grand reception at his house in honor of Prof. Miller, which was attended by many health officers of our city, and several professors of the medical faculty. The entertainment was a great success. Miss Cagiati, accompanied by the distinguished teacher De Leva, played beautifully on the violin. Miss Turresin was also much appreciated at the piano. The following ladies sang beautifully: Miss Auselmi, accompanied by the great teacher Sarmieutos; Miss De Gregorio, also the baritone, Mr. Caparozzo, accompanied by the great teacher De Cicco. The tenor, Domenico Vasco, with his powerful, pleasing and high-sounding voice, pleased the audience with his songs; and the tenor, Luigi Godono, caused such an enthusiasm that he was asked to give several encores. The host, Chevalier Guerini, and his gentle sister, Miss Almerinda, entertained the guests with warm hospitality. Day before yesterday Prof. Miller went together with Guerini to the house of Prof. Schron, who is known all over the world for his discoveries as to the life of the crystals. The preparations shown by Schron, with his usual kind courtesy, awakened in Prof. Miller a very lively interest and admiration. Mr. Miller visited also our zoological station, where Prof. Lobranco furnished him a number of very interesting explanations, and he was very kind to him. In the evening of April 4th there was a banquet given at the Gambrinus, organized by the directors of the Newspaper h'Odontostomatologia, in honor of Miller, and this banquet was attended by several dental surgeons of Naples, and was a splendid success. Several toasts were made, to which the much-feasted Mr. Miller responded in English, which words were translated by Mr. Guerini into Italian. Prof. Miller will leave Naples tomorrow. The great scientist has awakened great admiration in all of those who had the good fortune to come near to him.

New Dental Law in Iowa.—A bill for an act amendatory to and additional to the law as it appears in Chapter Nineteen-a (19a), repealing Twenty-six Hundred-i (2600-i), and enacting a substitute therefor and amending Twenty-six Hundred-h (2600-h) of the supplement to the Code, relative to the practice of dentistry, recognizing certificates of dental examiners of other states and territories, and providing for certificates of removal of dentists from the state. Be it Enacted by the General Assembly of the State of Iowa:

Section 1. The Board of Dental Examiners may, without examination, issue license to practice to any dentist who shall have been in legal practice in some other state or territory for a period of at least five years, upon the certificate of the Board of Dental Examiners or a like board of the state or territory in which such dentist was a practitioner, certifying his competency and that he is of good moral character, and upon payment of Twenty-five Dollars ($25.00). Provided, however, that the state from which any practitioner may come shall have, and maintain equal standards of laws regulating the practice of dentistry and recognize exchange certificates issued by the Board of Dental Examiners of the State of Iowa.

Section 2. Any duly licensed dentist of the State of Iowa who is desirous of changing his residence to that of another state or territory shall, upon application to the Board of Dental Examiners and the payment of a fee of Five Dollars ($5.00), receive a certificate which shall attest that he is a duly licensed dentist of the State of Iowa.

Section 3. Amend Section Twenty-six Hundred-i (2600-i) of the supplement to the Code by striking out all of said section and inserting the following in lieu thereof: Section 2600-i. Every person to whom a license is issued shall file the same for record with the clerk of the district court in the county in which he desires to practice dentistry, and the clerk of the court shall be entitled to a fee of 50 cents for recording such license; and failure to file such license for record within one year after it is issued by the board shall work a forfeiture thereof, and said license shall not be restored by the board except upon the payment to it of the sum of Twenty-five Dollars ($25.00) as penalty therefor.

Section 4. Amend Section Twenty-six Hundred-h (2600-h) of the supplement to the Code by inserting after the word "disbursed" in the third line thereof the following, "and shall publish said report with a list of dentists licensed to practice in the state."

Patents of Interest to Dentists, Recently Granted.—

815907—Dental expander or dilator, Cleveland G. Davis, Manistee, Mich.

815807—Dental plate swage, Grant E. Freeborn, Belfast, N. Y.

815534—Toothpick and forming same, Henry S. Hopper, Norfolk, Va.

815374—Tooth mold, Evelyn Pierrepont, London, England.

816069—Dental tool or clutch, Benoni S. Brown, Onset, Mass.

816481—Cap and brush for bottles, Johnson Lane, Jamestown, Cal.

817050—Dental floss-holder, Joseph C. De La Cour, Conshohocken, Pa.

12470—Reissue, manufacture of acid-proof cement, Richard Liebold, Weimar, Germany.

816668—Dental instrument for raising barbs upon wires, Lloyd S. Lourie, Chicago, Ill.

816685—Shield and moistener for dental tools, Charles A. Sevier, Jackson, Tenn.

816828—Dental contour pliers, Nathan H. Smith, Seattle, Wash.

817978—Toothpick, Albert E. Lickman, Baltimore, Md.

818000—Toothbrush, Charles R. Stevenson, Boston, Mass.

Copies of above patents may be obtained for 10 cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Bldg., Washington, D. C.

"Scrap Pile Wanted."—Under the heading, the "Scrap Pile," I desire to make a suggestion regarding raising a fund for San Francisco sufferers. From my experience during the last few weeks, the task of acquiring a sum sufficiently large to materially assist those in need is a difficult one, and the "Scrap Pile" idea envolved from the ease with which a goodly sum was collected in Kansas City a year ago for an event of minor importance, by simply requesting all asked to donate a portion of their gold scraps, several hundred pennyweight soon accumulated. Now let every dentist, regardless of the fact whether or no he has paid into other funds, box up at least a portion of your gold scraps and send them to any dental journal, or to Dr. J. D. Patterson, of Kansas City, Mo., Keith & Perry Bldg., Treasurer of National Relief Committee, and further assist those in distress

J. P. ROOT.

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

THE DENTAL FUNNEL.

BY G. S. JUNKERMAN, A. M., M. D., D. D. S., CINCINNATI, OHIO.

Professor of Operative and Clinical Dentistry and Dental Anatomy, Cincinnati College of Dental Surgery, Cincinnati, Ohio.

In the course of human events, I presume everyone not born to silver spoons or purple robes, who has acquired sufficient physical energy, has tried to drive a nail. Those who have accomplished it doubtless know also that there is only one successful way to attain this small detail of the carpenter's art, and myriads of other ways of failing in it. The result, however, if successful, makes that individual deserving of the *title* of nail-driver; yet we do not find persons circulating around claiming the title either for the honor or emoluments which its practice might bring. Were such honor or sufficient emoluments the compensation for being able to drive nails to their destination, I doubt not that there would be a profession or trade known by that name. Because there is not a calling known as the nail-driver, on the other hand, is evidence sufficient that neither honor or compensation or recreation attaches thereto. The reason for this condition of things seems logically to work out to the conclusion that although nail-driving is important to humanity, it does not require much application or training to be successful in it, or that it is a detail of some calling or trade individualized under some other head. Such we know to be the fact, as the worthy carpenter must be a successful nail-driver and considers the learning of it as part of his manual training. To pursue the subject still further: if the sole and only occupation of the carpenter was driving nails, and he had learned that perfectly, the learning of anything else could not possibly make him a better carpenter as pertains to the result of his trade. He would know nothing else, need know nothing more, and could perform his function to perfection and the satisfaction of any who required his services. In this condition he is a useful citizen, and as much a part of the great integer of the human race as the head of a nation or a nut on a complicated piece of machinery. Educate this same nail-driver in the arts, politics, or business, and he becomes discontented and reaches out, only to result, perhaps, in a poor *something else.* He finds that his additional education cannot be applied or be of use to his former calling nor can his former calling spread the blanket of content upon his present increased education. Education and improvement are by no means synonymous terms. An educated thief or villain is in every way a more dangerous ingredient of society than an ignorant one. The unsophisticated country boy pushing the plow makes a happy member of society, but educate him outside of the requisites for a good farmer and you are experimenting with unknown quantities, which may be poisonous, explosive, or, on the other hand, harmless. Which? He might make a good something else, but will he? If he does not his life and usefulness are ruined. There is such a thing as over-education as well as under-education. The Russian serf has enough education for his condition, and were he free and not overtaxed he would live a happy life in his humble surroundings. Each member of the human race is a creature of custom and environment. These must be congenial to create contentment. The educated hog would make a sorry parlor companion, nor does he make better ham or sausage on account of his education. The human voice, the true heritage of barbarity, may be so cultivated as to become a labyrinth of cultivation, but minus the voice. Myriads of well-educated persons have been, and are today, absolutely useless members of society. They are samples of the *voiceless cultivation.* If the foregoing logic be true, and I sincerely believe that it is, we have in no way decried education, but we wish to be recorded as distinctly repudiating the present method of the application of education, and more particularly as it pertains in its application in the admission of students in our dental schools. Present requirements for admission of dental students to our colleges seem inadequate in the minds of many dental teachers who at least by virtue of their long experience in conducting dental education, have the right to be considered judges. If these declaimers are honest in their expressions they will be likewise plastic enough in the mold of logic to change these conclusions, if sufficient pressure in the shape of tangible reasons to prove them wrong be presented to them. If dishonesty or prejudice, or desire of personal gain have molded their conclusions, then we cannot hope for a betterment of conditions until they have a change of heart or such pressure be brought to bear as to remove them from their responsible positions and to fill their places by men of honesty and integrity. This principle applies equally to college faculties, dental examining boards and dental societies as a whole or individually. There is nothing that needs reform so much as sudden *reform* itself. That reform born of long and sustained thought, which by slow progress bursts forth as slowly into a beautiful flower, is different from that other kind that results in a loud explosion like bursting of confined gas which knows no limit and produces destruction and devastation in its wake. The one is a constructive, the other a destructive reform. In our opinion, dental education finds itself today in the position of the little boy who, in the process of working a problem, has filled his slate with figures, and finds the result wrong from defective principle. He may change the figures, but to no good end. The correct and wisest plan is to use a wet sponge, rub the slate clean, and begin over again. All well-balanced dental teachers realize that dentistry is a peculiarly constructed mechanism. The pyramids of Egypt were once supposed to have been constructed of immense pieces of stone. So great were these stones and so foreign the contents of these pyramids to their environments that it surpassed the ken of man to determine where the stone came from and how such huge blocks could have been lifted with such mathematical precision to their places. Yet by keen thought and close observation the mystery has been solved. Their environments are not foreign, their structure is not stone, and their fine joints are fully explained, and their huge sections have diminished to particles so small that the hand of the infant child could have placed them: all of which conclusions have been reached by the discovery of the ancients' knowledge of a lost art in fine cement work. The slate was wiped clean, however, and a new principle started with to bring about so brilliant a result. Have we been trying to construct the pyramid of dental education out of impossible blocks of stone, when it would have been so easy to resort to cement work and attain success? I think that we have. Our pyramid looks jagged and unsightly. Shall we still persist in vainly calling to our dental solons on top of the pyramid to pull harder to elevate stones that they cannot move, or even use should they be successful in hauling them up? Would it not be better to call down our force, set it to work to remove the ridiculous extravaganza and begin aright with a new process. Dentistry's idiosyncratic structure renders it entirely and absolutely different from any other calling, and it is necessary to select the material composing its exponents with this thought ever in view. A high school training, whether it be two years or a diploma, is an inadequate measure for admitting a dental student to the freshman class. We might even go so far as to state that the education gained in such a school is a detriment to a dental student, for it gives such a student an insight into so many other callings of life that are more pleasant and emolumentary and so little that can be used in dentistry proper, that it brings a qualm of dissatisfaction that he had not applied his acquirements which he had already attained. Either the high school training is wrong or we are wrong in selecting it as a criterion of entrance. In accepting an equivalent we only strain our conscience and secrete our disbelief in the measure.

I cannot believe that a high school training is wrong nor would it be a detriment to a dental student who had all the requisites as a member of the idiosyncratic profession, but when you make it the only cable that binds the disciple to the top, you are putting on that cable too much over-weight. Life is a great hurdle race, but a race in which the entire human family is entitled to start. You take the bridge, the water jump, then comes the sand hills and the turf-covered bunker and the rocky fence that covers its treachery with beautiful vines. Some have already fallen behind and each impediment claims many victims, but the race is not yet run: you come to the way that is wide, then narrows down like a funnel. You must take this narrow way, and one at the time. Once through the apex a clear run in the flat to the wire, and the race is yours. Such a start and such a race would I give all students who wish to enter the profession of dentistry. How few would go through the funnel, but how qualified would these be. Those who had fallen by the wayside would have contributed to the support not only of the few who had succeeded, but also the building up and perpetuation of a noble institution made possible only by the contributions that the many had made. It is a law of nature that the many shall support the few. Dental schools cannot fail to come under that law. The funnel method would try many, but choose few. It would furnish the strong method for introducing strong men into the profession. This principle is exemplified in the tropical storm, with its funnel-shaped cloud. The strongest cloud will have the small end of its funnel towards the earth because in that end lies destruction to everything that it touches. Were the big end of the funnel toward the earth, the cloud itself would be immediately destroyed by its first contact with any foreign substance. Yet this is the end of the funnel of dental training which we are presenting for the public to destroy instead of presenting this end to the dental students who wish to enter our colleges. Can we reverse the funnel and call many and choose few?

High school diplomas are perhaps the most plastic and indefinite measuring cups that are used. No two are alike, not even coming from the same school. They are even more indefinite than our dental examining boards are pleased to style our dental diplomas. Yet these high school inequalities are arbitrarily demanded and used by the powers that be or assume to be as first-class passage tickets over the road to dental colleges, while the transfer obtained upon these tickets must be in too many cases, stamped "not good" over the road of professional dentistry. The man who possesses sufficient force to have acquired the faculty to read, write and speak grammatically, correctly the English language (how few there are!!) I would consider worthy of a ticket of entrance to any dental school of this country. Few realize how much zeal, energy and pride is indicated in such an accomplishment. I am prepared to be stigmatized as a backslider by some who may read this assertion, but I have seen and do daily see so much slaughter and butchery of the English language, and what it comprehends, by high school diploma bearers that I am willing to bear with equanimity the mantle of the apostate until such a time as the profession will see fit to remove it or bear it with me. Had the dental colleges of this country been brave and manifested the expression of their real opinions many years ago the apostate mantle might have been being worn by all of them today. This army of apostate, however, would have been quite strong enough to have carried precedent so that colleges might have been at the head of dental education with their well-trained teachers instead of men born of politics and ignorance in such matters. It will be asserted that these preliminary educational requirements are nothing, and that it would be going back 20 years. In the face of this presentment of the subject, I will assert that the same energy accompanied by the worldly experience gained with it, which was necessary to accomplish *English*, will realize and acquire all other necessary educational requisites as the demands appear for a dental education. I do contend that a completed high school training in a good high school might be requisite for entrance into any other profession, but dentistry to my mind is free from this requirement. If the applicant has such an education it may do him no harm, but the placing of such an embargo is too restrictive and does not give us enough material to choose from. At this time I recognize, as I never did before, and I believe all dental teachers of long experience will agree with me, that there are really very few dental students who come under our care that will, even by time and closest attention, ever be transformed into really good dentists. From this statement we can make another one equally as strong, and the logical sequel of it: and that is that there are really very few good dentists in practice or out of it owing to the fact that it was not appreciated when they entered college that, although possessing the high school diploma requisites, the other more important requisites were wanting. In the eyes of those gentlemen who have been boosting preliminary requirements from year to year along the line of dental progress, a two years' high school training or a high school diploma may seem necessary. Their trails, however, have the odor of the walking delegate, who heeds only the poltical and not the industrial end of the problem. They know little or nothing of the firing line and too much of the commissary department. And yet they have been poor commisariats in allowing the road to their supplies to be cut off without at least a desperate battle. If we are going to use the high school diploma as an entrance ticket we must at least have it printed on both sides, because there does not seem to be enough room for the necessaries on one side. I would favor a new print entirely with the funnel-shaped insignia on it. We have all heard of a very warm place in which good intentions are used for paving stones. Intentions only are the property of fools. What we want is good results, and the dental college educator wants to turn out as the result of his labors, good dentists.

Dentists with high school diplomas attached to them, with otherwise wholly inadequate attributes for the need of so peculiar a calling as dentistry, are good intentions that are strewn along the short but wide causeway that leads to the insolvency department of dental surgery. We never can end right if we start wrong; we may even end wrong if we start right, but there is always then a possibility of a favorable end. The *selective principle* is wrong; erase the figures and start again.

REGULAR CONTRIBUTIONS

THE IMPORTANCE OF NORMAL OCCLUSION.*

BY L. P. BETHEL, M. D., D. D. S., COLUMBUS, OHIO.

Dentists in general seem to be paying more attention to occlusion of the teeth now than ever before. Whether this is due to ideas advanced by our orthodontists, or is an awakening of advanced ideas in dentists in general, it matters not.

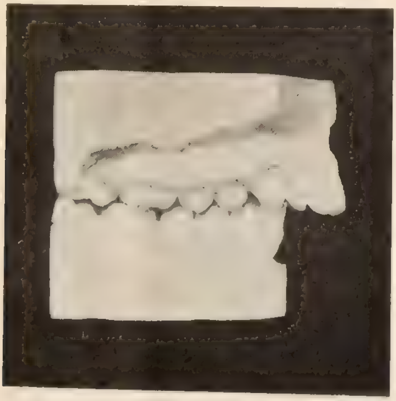


Fig 1

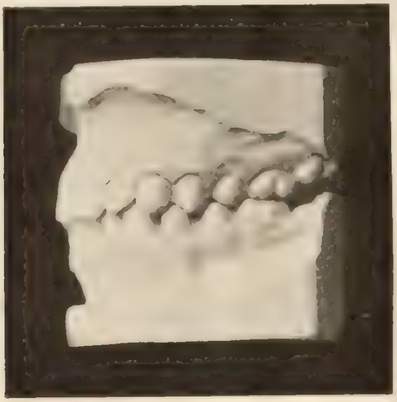
But occlusion of the teeth is a subject of far greater importance than formerly supposed by the majority of dentists.

A few years ago comparatively few dentists could tell whether a patient's teeth were in normal occlusion or not, and I presume there are many at the present time who would feel compelled to guess, should they be required to give an opinion.

---

* Read before the Eastern Indiana Dental Association, New Castle, Ind., May, 1906.

For example look at Fig. 1. The molar, bicuspid and cuspid teeth appear to be in good occlusion and no doubt there are many who might mistake this for a normal arrangement.



. Fig. 2

Now let us look at another case, Fig. 2, where the teeth are in normal occlusion, and compare the two.

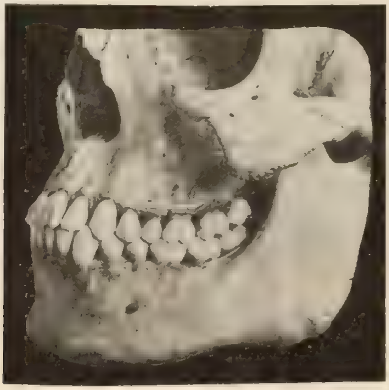


Fig. 3

In the normally occlused case, Fig. 2, it will be seen that the lower teeth as far forward as the lateral incisor, are one cusp, or the width of a bicuspid tooth, in advance of the corresponding upper teeth, or in other words, are mesial to the upper teeth.

Now by looking at Fig. 1 again, you will observe that the upper teeth are mesial to the lower the width of a bicuspid tooth, and instead of being in normal occlusion, all these lower teeth are in malocclusion distally the width of a bicuspid tooth.

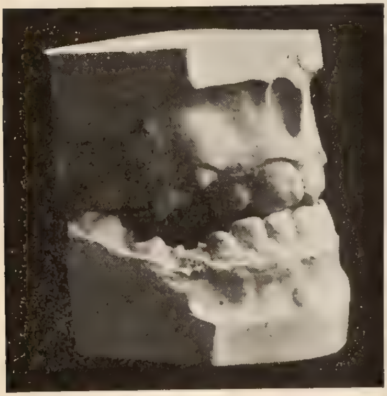


Fig. 4

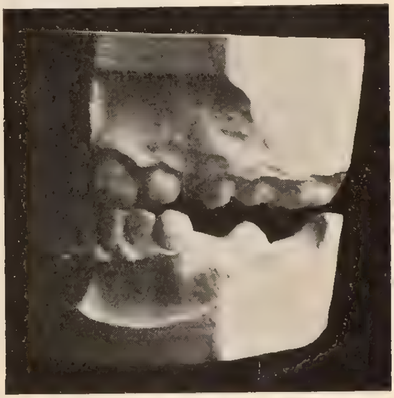


Fig. 5

As the first molar teeth more often erupt in their normal position than any of the other teeth, the relative position of the first molars has been accepted as the key to occlusion.

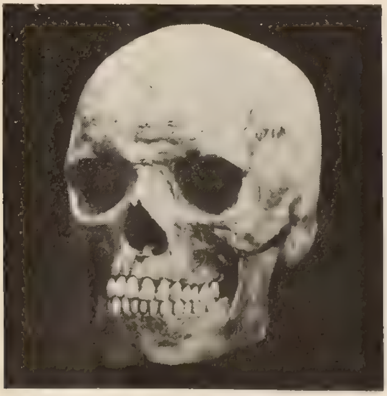


Fig 6

In normally occlused teeth we find that the mesio-buccal cusp of the upper first molar occludes with the mesial and distal buccal cusps of the lower first molar; the upper second bicuspid, occludes with the lower first molar and second bicuspid; the upper first bicuspid occludes with the lower second and first bicuspid, etc., the lower being one cusp in advance of the upper.

In Fig. 3, we see an almost ideal occlusion of the teeth. Notice how perfectly the teeth interdigitate and also the arrangement of the inclined planes of the cusps.

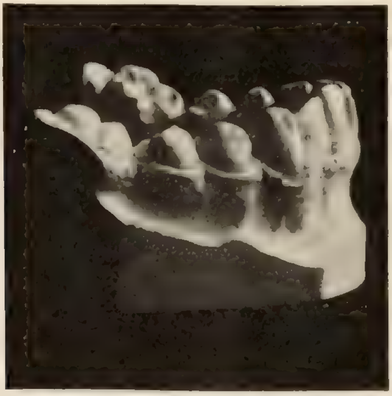


Fig. 7

These inclined planes play an important part in holding the teeth in position, when in good occlusion, and oftentimes exert as much influence in keeping mal-posed teeth out of their correct position. This important fact should not be lost sight of.

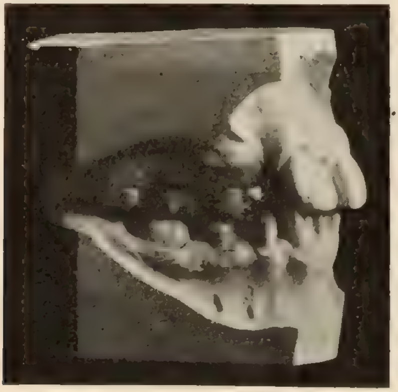


Fig. 8

The general arrangment of the teeth, the buccal cusps of the lowers falling in the sulci of the upper bicuspids and molars, and the lingual cusps of the upper teeth falling in the sulci of the lower bicuspids and molars, gives the greatest possible surface for mastication of food.

So when teeth are in malocclusion, mastication is interfered with to a greater or less extent according to the position occupied by the teeth out of harmony with the line of occlusion.

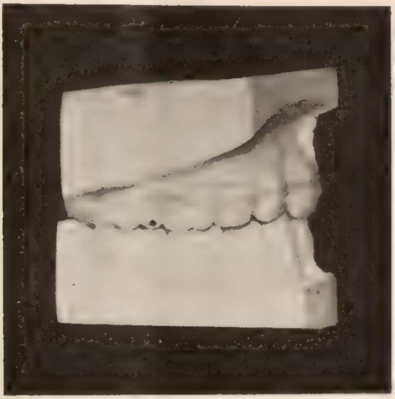


Fig 9

Before passing to the next picture notice in Fig. 3 what an opportunity was afforded for thorough mastication by the normal arrangement of the teeth here found.

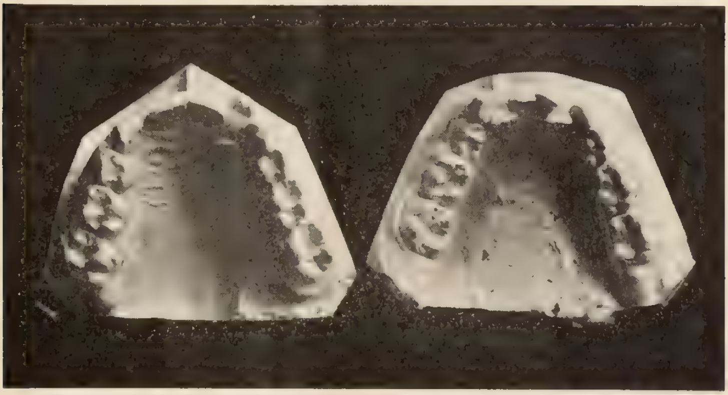


Fig. 10 Fig 11

Now, by way of contrast, look at the models shown in Fig. 4. This was the case of a boy aged eleven years.

As you will notice, there was no occlusal contact except one cusp of the right upper molar, with the lower, and the riding of the upper centrals on the lower incisors.

On the left side, Fig. 5, the lower first permanent molar had been extracted leaving no occlusion of the teeth. Can you imagine a more deplorable condition? Thorough mastication of food was impossible and the lad had to live on a bread and milk and mush-food diet. In consequence, he is an illy-nourished, delicate looking boy, not normally developed either physically or mentally.

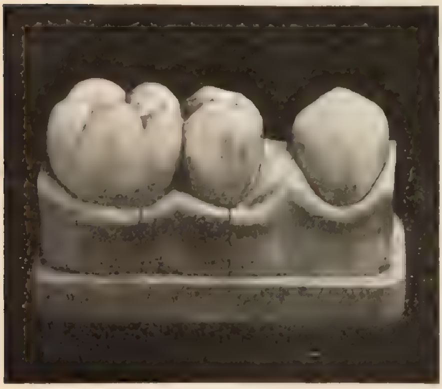


Fig. 12

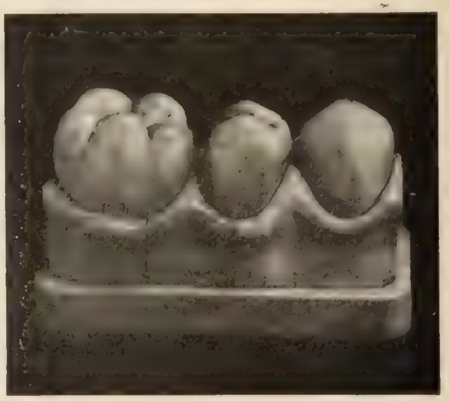


Fig. 13

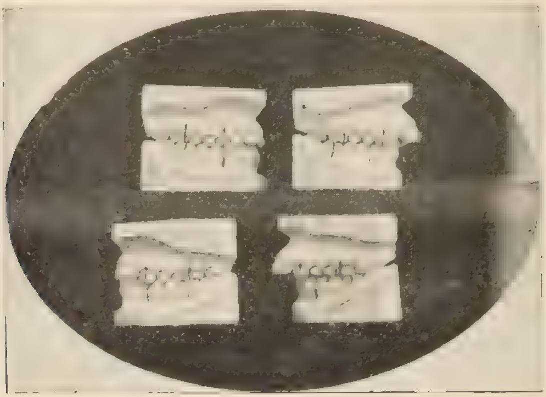


Fig. 14

Could the deciduous teeth have been preserved and the normal shedding taken place with normal eruption of permanent teeth, who can question but that that same boy today would have been better in every way. The father and mother are both healthy, intelligent people, and the other two children well developed and physically strong.

In Fig. 6, we see how, when the teeth are all in good alignment and in normal position in the arch, they lend support to each other — and when, in addition, the teeth are in normal occlusion we find the jaws in proper relation. Then the occlusal inclined planes, the interdependence of the arches, and the influ-

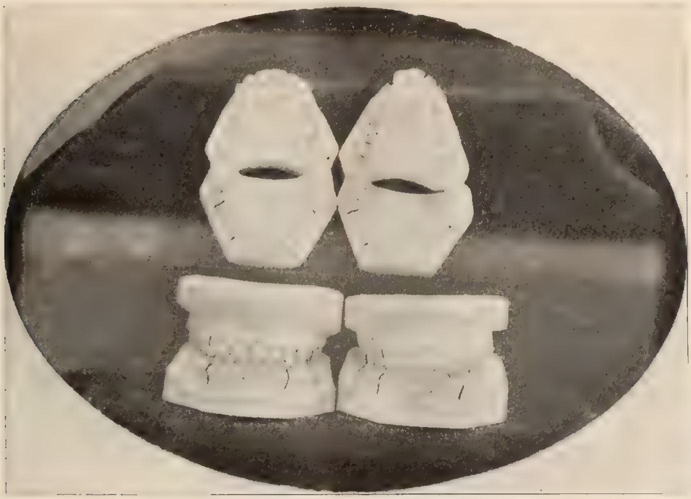


Fig. 15

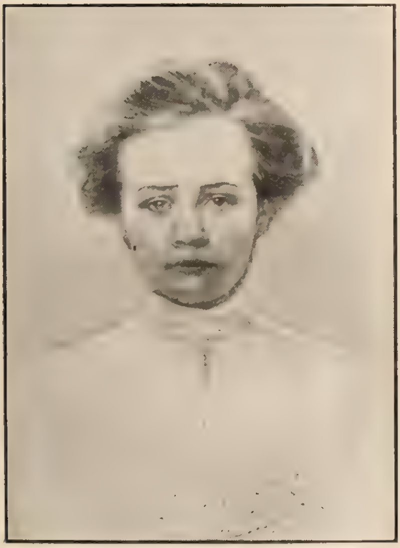


Fig. 16

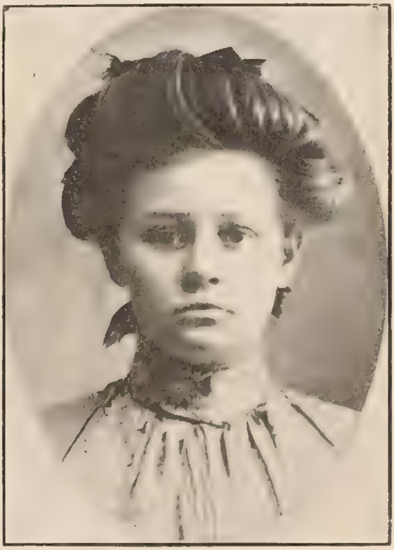


Fig. 17

ence of the muscles form a powerful factor in maintaining the teeth in position so long as they are thus supported. Interfere, however, with the support by extraction of a tooth or teeth, for instance, and a shifting of one or more teeth is liable to occur causing some degree of malocclusion.

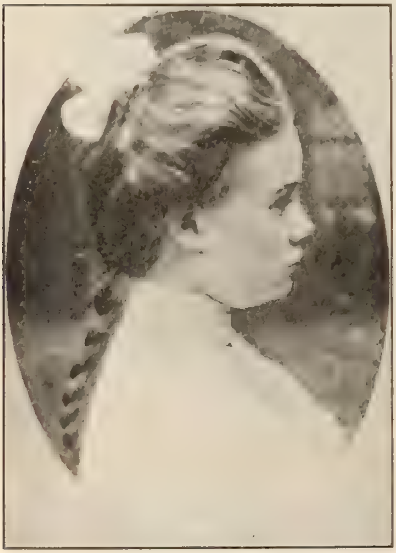


Fig. 18

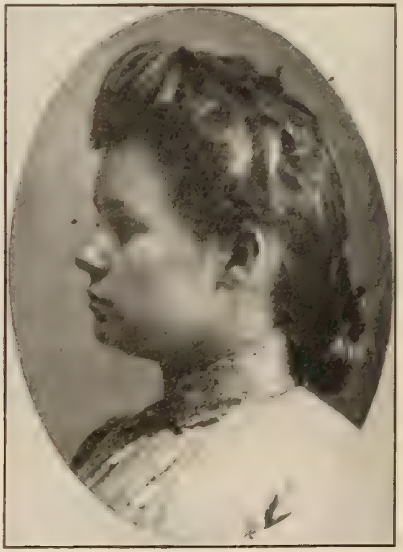


Fig. 19

In Fig. 7, you will notice the inclination of the second molars brought about by the loss of the first molars and consequent loss of support. This tipping of the second molar is quite common where this condition exists.

In Fig. 8, notice how the occlusion has been changed through shifting of the teeth due to loss of teeth and lack of support.

In pyorrheal conditions we may get a shifting of one or more of the loosened teeth and a weakening of the support of the teeth in the arch. When this occurs if the teeth are brought back into position, and a permanent retaining appliance made, you will not only have restored occlusion but re-established the support of all the teeth in the arch. The teeth will be held firmer in position and be able to resist the stress of mastication to a surprising degree.

In case extraction of any of the permanent teeth becomes necessary, an artificial substitute, such as bridge-work should be inserted in order to hold the space and maintain the proper support of all the teeth in the arch. If this were given more thoughtful attention by dentists in general, many maloccluded conditions would be avoided.

In this connection it might not be out of place to consider briefly the importance of normal occlusion in the deciduous teeth as well as in the permanent.

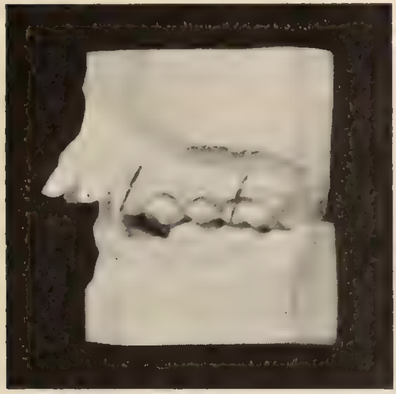


Fig. 20

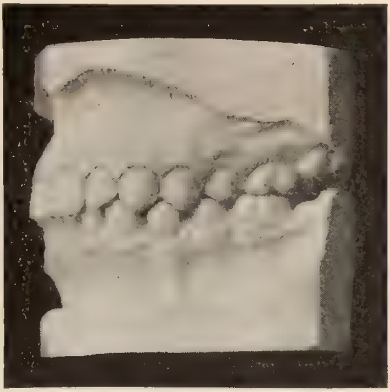


Fig. 21

When the deciduous teeth are in normal alignment and occlusion they support one another the same as do the permanent teeth. As the permanent teeth grow down and erupt, being in the aggregate larger than the deciduous, they exert pressure along the direction of the arch stimulating growth in the jaw, which develops in size to accommodate the permanent teeth. Thus when the molar teeth erupt, a forward pressure is exerted on the deciduous teeth in the lateral halves of the jaw and through the influence of this pressure there is a lengthening of the jaw. And you have all noticed how the deciduous anterior teeth separate just before the time of eruption of the permanent, and the jaw is expanded latterly. Now if the support the deciduous teeth lend to one another be ruptured by premature loss of one or more teeth, the jaw will not develop fully.

For instance if a tooth be lost, say the first deciduous molar, the wedging influence from eruption of the permanent molar will be all posterior to the lost tooth and will not cause the usual forward movement of the teeth anterior, and normal development does not take place.

Or if anterior deciduous teeth be prematurely lost, say the lateral incisors or cuspids, the wedging force necessary to stimulate development is interfered with and this portion of the jaw does not fully develop — consequently when the permanent teeth erupt there is not room enough for their accommodation and some must take a malposed position.

In Figs. 9, 10, 11, will be seen the results of premature loss of deciduous teeth. There has been an arrest of development of the jaws and consequently insufficient space necessary for the coming permanent teeth with lingual deflection of the lower laterals and insufficient room for the permanent laterals above.

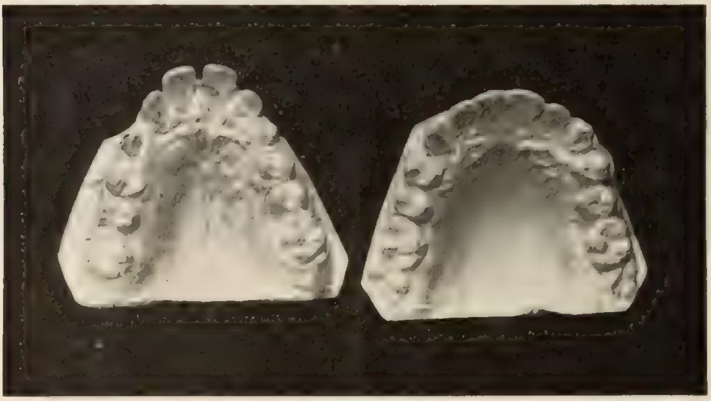


Fig. 22 Fig. 23

One can find numberless cases where the premature loss of the deciduous teeth has resulted in malocclusion of the permanent teeth with consequent inharmony of the facial lines.

Sometimes the support of an arch is weakened by proximal caries, particularly in the bicuspid teeth. You have probably all noticed how a bicuspid, badly decayed on the proximal side, will frequently lean toward the tooth adjoining as in Fig. 12.

As the tooth assumes a slanting position it changes its occlusal contact with opposing teeth and the new direction of force in mastication may be the means of forcing other teeth out of harmony. One cannot forsee what malocclusion may result from the shifting of a single tooth.

When a tooth leaning from loss of proximal surface, and support, presents, bring the tooth back, by means of some separating material, to its natural position (Fig. 13) before filling, then properly contour the filling so as to restore the proximal contact and support. Then you have not only restored the contour of the tooth but the harmonious relations of the arches in that location.

In supplying crowns or bridges the aim should be to establish an occlusion as nearly normal as possible. The cusps of the teeth should be reproduced and the direction of force and distribution of stress through mastication should be carefully studied, for this has much to do with the life of the appliance, the re-establishment of normal occlusion, and retention of the teeth in the desired position.

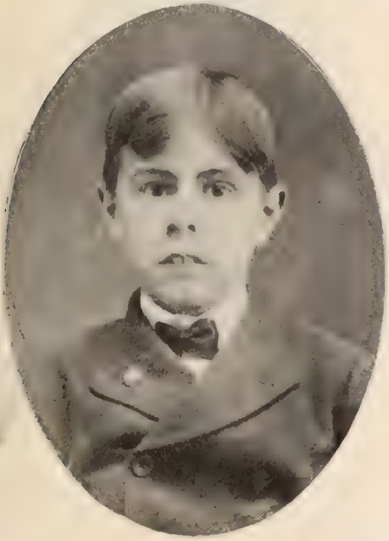


Fig. 24

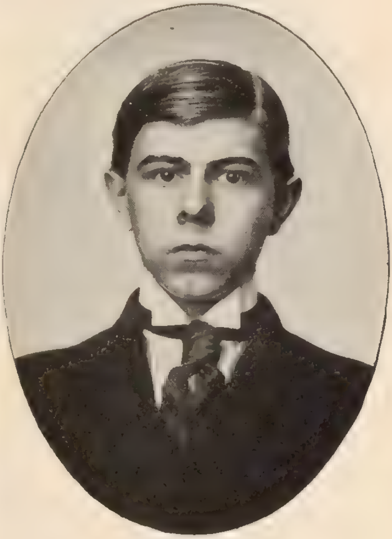


Fig. 25

Now last, but not least, let us note the effect of malocclusion and of normal occlusion on the features.

When the teeth are in normal occlusion the facial lines are more in harmony with the type of the individual. On the other hand when the teeth are in malposition it affects the harmony of the facial lines more or less according to the condition of the malocclusion.

To give you a better conception of this phase of the subject I will show a few cases on the screen.

The first case, Figs. 14, 15, 16, 17, 18, and 19, is that of a girl aged fourteen years. The case presented distal occlusion of the lower arch, lack of development of the mandible, contracted upper arch and protrusion of the upper incisors.

The patient gave a history of mouth-breathing dating from about the age of four years and continuing until the age of twelve, when an operation was performed for the removal of adenoid vegetation, after which normal breathing was established, but interfered with, however, by the condition of the teeth, the upper incisors protruding so much, and the upper lip being so short and thin that it was with considerable difficulty that the lips were closed tight enough to prevent more or less mouth-breathing.

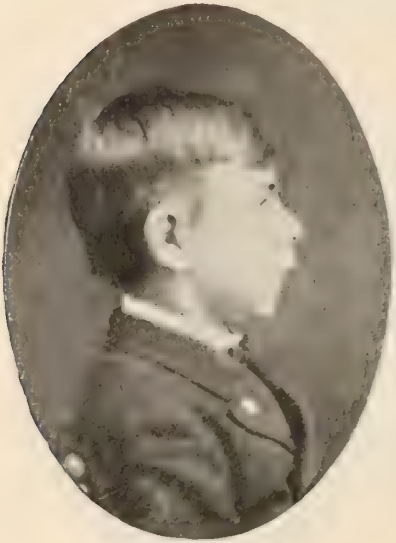


Fig. 26

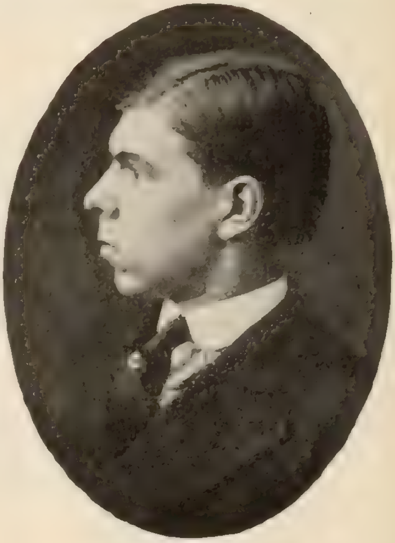


Fig. 27

The lack of development of the upper lip, due principally to its being put out of function by mouth-breathing, rendered it almost useless in preventing the labial movement of the upper incisors; this movement was also facilitated by the pressure of the lower lip against the lingual surfaces of the upper teeth, as the patient would continually bite it, the habit causing an abnormal development of the lower lip.

The next case is that of a boy who had suffered from nasal obstruction and mouth-breathing. The upper arch is characteristic of this affliction. Adenoids were removed at the age of eleven and a half years and the correction of the malocclusion began when he was about twelve. Fig. 20 shows the condition of the teeth before treatment. Fig. 21 shows the occlusion restored by expanding the arch, bringing the lower teeth, which were in distal occlusion, forward to normal position, retracting the protruding upper incisors, etc.

Figs. 22 and 23 show the palatal view of the case before and after treatment.

Figs. 24-26 show the facial appearance before correction of the malocclusion.

Figs. 25-27 show the great improvement in the features brought about through operation for correction. Notice how it has changed the shape of the nose, the lips and chin, almost completely changing the appearance of the face.

I could show you many similar cases but these will illustrate the effects of malocclusion on the facial lines and what a change is brought about by movement of the teeth so as to restore normal occlusion.

Occlusion should be the watchword, not only of the orthodontist, but of every general dental practitioner as well.

WHAT SHALL WE DO WITH OUR CASES OF EROSION?*

BY DR. W. G. HAMM, CHILLICOTHE, OHIO.

An important question has arisen within the last few years, what can we intelligently do with a local affliction of the oral cavity known as "erosion"? Shall we go deeper into our physiological and pathological technicalities? Shall we lay down the gold mallet, throw aside the mechanical ingenuity of our profession, and take up the microscope and test tube, and treat the pathological conditions of the oral cavity by establishing an antitoxin serum, whereby we can cure tooth lesions by means of systemic treatment? The new century may give birth to a dental medicine specialist who will sit in his office with a wise look and supply his patients with an "elixir of tooth restoration," but what shall we do until this specialist appears to revolutionize the "system of dental surgery"? Shall we feed our patients calcium, sodium phosphates and all bone-making elements in foods, waters and medicines which may invigorate the growth of the teeth, and repair all tooth lesions and materially aid our mechanical efforts? Quite a serious matter indeed, gentlemen.

---

*Read before the Ohio State Dental Society, December, 1905.

EROSION.

Erosion localizes itself chiefly on the labial surfaces of the anterior teeth and extends as far back as the molars. In some cases it is found on the lingual surfaces, but this is rare. Its chief point of attack is at the gingival line, sometimes extending up as far as the incisal edge. Some authorities claim that the reason it localizes at this particular point is, that the weakest point is where the enamel and dentine join and that by slight recession of the gums the line is exposed to the eroding element more readily. I have found eroded pits on almost every point on the labial surface of the anterior teeth; nevertheless it can be easily distinguished from the ordinary carious cavity by its color and extreme sensitiveness. Its most uniform attack is at the necks of the teeth and around them in the shape of a crescent or the letter U, making a transverse groove either in the superior or inferior arch anteriorly. So far as enamel is concerned, erosion can, of course, present no symptoms; it can only exhibit signs which are the excavations themselves, their forms and character of their walls; when the dentin becomes involved the hypersensitiveness is the highest.

EROSION AS A DIAGNOSTIC SIGN.

The existence of erosion has become a very valuable diagnostic sign for the general practitioner in search for masked maladies. An examination of the lip will usually reveal the labial follicles enlarged and inflamed. The base of the eroded cavity appears to lie upon successive striae of enamel; the decalcification appears to proceed inward until one of these striae is met which, furnishing an increased chemical resistance to the action of the decalcifying agent, causes the lines between this striae to proceed more rapidly. Williams has shown in the decalcification of enamel in caries lines of greatest chemical resistance in lines of enamel stratification. It is possible that some of these lines, irregularly situated, may govern the direction which the erosive process takes.

CLASS OF PEOPLE AFFECTED.

We usually find erosion existing in the following class of patients: Those who make excessive use of carbohydrates, the gouty, the rheumatic, the anaemic, the tubercular, the scorbutic, and people who usually live very high without dental hygiene. It is, however, more frequent, in the anaemic and neurasthenic class. It is usually accompanied with hyper-acidity of the stomach, a fetid acid odor of the breath, and with repeated and frequent eructations. I wish to call attention here to the point that I have never seen cases of erosion existing in the mouths of tobacco-users. It may exist, but I have never observed a case. (It seems to me tobacco may be a good anti-toxin for erosion).

CAUSES OF EROSION.

The causes of erosion are not clearly defined yet. We have many suppositions, but no solid facts. From the chemical composition of the enamel it is evident that the essential cause must be acid. Only acid substance can dissolve the enamel. The mechanical idea of abrasion must be set aside, as erosions exist in the mouths of patients who do not know what a toothbrush looks like, and the mastication idea of erosion reminds one of the slang expression, "one who chews the rag"; anyway, it is evident that the acid must be of a localized formation, for if of a general distribution the lingual and occlusal faces of the teeth would be affected equally with the labial area. I have always observed that the areas of erosion are so situated that food debris and fermentable materials collect in the least amount. What substances or structures can form acid or acid bodies enough around the labial surfaces to cause the continuance of erosion? We are naturally driven to believe that local acid secretion is the active cause. Secretion implies the existence of glandular tissues, and the only glands in close relationship antagonizing the labial surfaces are the muco-salivary glands of the lips and cheeks, called follicles, and there is where this acid secretion may come from. Dr. E. C. Kirk of Philadelphia was among the first who pointed out that probably these glands transport this active cause. The production of this erosive material is another bump. Many well-known authors have accredited the acid to a gouty diathesis, others to faulty prophylaxis. None have given it a definite name yet, even when the existence of rheumatism and gout are denied by both patient and medical attendant. It is, indeed, a rare case that the patient does not complain of some general disorder. The researches of the pathologists insufficiently explain the origin of erosion. I am aware that pathological chemists refuse to recognize uric acid as a midway product for urea formation, yet it cannot be denied that uric acid will form in an increased amount if oxidizing function be below par; all clinical and scientific reasons point that way. However, it has been recently discovered that uric acid cannot exist as free uric acid in the blood, but when formed it combines immediately with sodium and magnesium, then there is a deficiency in the red blood corpuscles, as in anaemia, and with a less number of red blood corpuscles less oxygen is carried, followed by diminishing oxidation in the cells.

Again the plethoric who suffers from rheumatism and gout, and takes large quantities of albuminous food in excess of that required to replace waste, chemically destroys the cell metabolism. We then have engorgement of the entire human mechanism, and the glands become overburdened with functional duty. We have reasons to believe that the exudates excreted by these muco-salivary glands are abnormal. Dr. Kirk says: "In conditions of irritation and consequent hyperemia the secretion becomes increased in the amount of acid reaction, and that this acid is not clearly known."

The solution of the calcium salts is the distinctive feature of this disorder, and the process is different from the usual lactic acid process in which the chemical is but one feature. It is believed that the decalcification, the molecular destruction, and the neglected prophylaxis of the mouth and the entire alimentary canal brings about this acid or acid bodies to produce erosion. It is believed that only acid substance can cause the decalcification, the molecular destruction of the enamel and dentin, and yet when the application of free acids is made we have a roughened tooth surface; in erosion the surfaces are frequently highly polished. Dr. W. D. Miller states that "eroded teeth preserve their polish upon calcining, which shows that the polish pertains to the inorganic constituents of dentin."

DIETETICS AS A FACTOR IN EROSION.

Now, in order that we may have further light on this subject, we may devote some thought to the consideration of the nourishment of the patients afflicted with erosion, their modes of living in the way of bills-of-fare. In localities where calcium, magnesium and phosphates exist in drinking water, I believe erosion is limited, and in localities where these elements do not exist I believe it is more extensive. While people who live on certain albuminous foods or carbohydrates in excess suffer most, I believe dietetics have much to do in this direction. We do not use the bone building elements in many foods. We throw away, for illustration, the coat of wheat, barley, rye and other cereals wherein large quantities of bone element is produced; this also exists in fruits and vegetables. The canned goods which are upon the markets today are good acid-producing foods. Many canning and preserving manufacturers fortify their products with acids. Some canned foods contain formaldehyde to produce and maintain color, flavor, and prevent fermentation; and when no foreign acids are added the condition of the fruits and vegetables and surroundings when canned may undergo some chemical change while in state of preservation and produce an acid active enough to destroy some tissue. While a very small amount of this foreign or acquired acid in these embalmed foods may not act directly through the secreting glands, by a continued use of such foods some cellular tissue breaks down and fails to respond when called upon for functional duty, and may leave the acid pass on and assimilate somewhere and there deposit as a free acid. It is too well known that these foods go through a long transportation and remain in stores for months before consumed. Take, for instance, the canned fish, catsup, dried beef and pickles, etc. This is certainly a very worthy point to consider in erosion. When we rob the system of calcium, chlorides, magnesium, phosphates, and other constituents which build up the bone tissue, we take away the supply and naturally the breaking down is more rapid than repair. Then this acid or acid body comes along and attacks this localized portion, and destruction is the result.

We are urged to preach and hear of "oral prophylaxis" every day and believe thoroughly in the idea of preventive means and measures in eliminating the cause to cure the effect in the art of intelligent dental healing, yet we, nevertheless, cannot get away from the fact that our patients usually come to us in a condition when it is already too late for prophylactic measures. It is well enough to talk learnedly of germ theory, bacteria, prophylaxis, etc., but we find the cleanest mouths in all christendom heavily infected with bacteria and acid fermentation. These do not ordinarily do any harm, but when faulty metabolism comes before us, the blood supply laden with products that originate low vitality of the system and which should be eliminated by way of kidneys and digestive tract, we may believe that this is the prime factor in the production of solutions erosive in character which act so freely and produce the local disease "erosion."

WHAT SHALL BE THE TREATMENT?

Now, shall we broaden our specialty to a more elaborate field or scope and assist our mechanical ability with some medicinal qualifications? And if erosion is caused by an unknown acid activity or by morbid conditions locally, or by faulty metabolism uric acid, oxalates, hydrochlorates, carbohydrates, faulty food sustenance, what shall we do with them in an intelligent way? Shall we refer our patients to the physician? Shall we lay aside all further investigation along this line? Shall we continue as we have by mechanical and local prophylaxis and trust to luck for the outcome? All of you well know that eroded cavities are hypersensitive, and even though we use all anaesthetic measures after the filling is inserted we have an extreme sensitiveness under metallic fillings even over a lining, and that the trouble often recurs even if we make an extension for prevention. Porcelain inlay is limited in permanence; it is about the best filling. However, the erosive action is so great that it readily attacks all cements. Yet I believe that in getting good tight edges, bevel extend them well, we will have as good a filling perhaps as we can get. Porcelain is certainly non-conducting and can be made uniform in color and easily inserted. Gold cannot be highly recommended, as it is hard to insert, and generally the edges are difficult to hermetically seal; one faulty blow with the mallet pulverizes the edge or flakes out the enamel, and we have the trouble over again in a short time. And gold is a high conductor of thermal changes. I have had some good results with gold fillings, but the greater number is on the failure side. The best results I have had with gold were by using Watt's strip crystal and DeTrey's moss fibre, and hand-packing the entire filling; if the edges will allow I use the mallet very lightly, but use the burnisher very often in finishing down the filling, and with great stress.

TREATMENT OF SENSITIVE CAVITIES.

When a cavity is very sensitive I usually precede with cement and allow it to remain 60 or 90 days, and then fill over the cement by removing a small film of the cement, but the most difficulty I encounter in the shallow cavities is that I cannot go deep enough to make the combination filling; where it can be done we have a good substantial filling with gold. Many operators deeming the insertion of gold fillings unwarranted under the conditions I have named.

GOOD RESULTS FROM AMALGAM.

With amalgam I have had some good results about the necks of the lower teeth. I find that amalgam gives off an oxidation around the edges which in some cases reacts erosion in connection with the assistance of prophylactic measures. One case I can recall where I had tried all filling materials and finally settled on amalgam (as it was my last resort); the patient presented himself three years later and I found all the filling intact, and no eroding recurring and with no enamel discoloration, but the central portion of the filling was very much oxidized; my conclusion at that time was that at the junction of the enamel and filling the eroding acid was there, but was readily reacted by this oxidation; whether it was the mercury or silver oxide that arrested the action in this case I am unable to say, but since I have used amalgam where I could in similar places, I have had the same results. What led me to believe that oxidation was the reagent in this case was that around the edges of all these fillings there was no discoloration. While the central portion of the filling was oxidized, the edges were as bright as on the day of insertion. I merely present this case for an example of amalgam restoration of erosion in the inferior anterior teeth. But where we can use porcelain inlay and gold cement in combination fillings I believe we have the restorative treatment as good possibly as we can get it.

LOCAL TREATMENT.

Until that new specialist arrives and gives us a good, reliable systemic treatment, what shall we do? Dr. Brubaker has suggested the advisability of destroying the muco glands by means of an electro-cautery as a radical cure of the progress of "erosion." Dr. Burchard advises the neutralization of it by alkaline mouth washes and polishing of the pits when it appears in its early stages. Dr. Kirk found that milk of magnesia used freely upon retiring at night, and also alternately painting the follicles with a solution of amber in chloroform, is good. Many alkaline washes are upon the market today for local purposes, but few, if any, for the general systemic treatment. After we have found the exact cause, shall we have placed upon the market an antitoxin for erosion, or shall we use milk of magnesia, alkalithia, bromides, iodide of iron, keep the patient on tonics, diets, etc., in connection with the restorative treatment. I would suggest, since not much is known about erosion, that we find out definitely just what acid or acid bodies causes "erosion," and then find what reaction is necessary to effect a permanent cure.

DISCUSSION.

Dr. W. T. McLean, Cincinnati—The essayist has made inquiry, according to the title of his paper, *What shall we do with our cases of erosion?*

I must compliment the paper regarding the many interrogations with which it is embellished; his anticipations are seemingly those of a medicinal elixir, a la dental, that will restore the eroded surface or prevent erosion, as we know it to occur upon the teeth. The exhibition of substances as aliment, to stimulate the perfect development of the teeth, is to me quite a novelty. A complete description of erosion has been given, when and where it is found, including its most potent symptom, namely, *pain*. My experience has been that among anaemic and neurasthenic patients, cases of erosion have been found more frequent, accompanied by hyper-acidity of the saliva. I have seen erosion in the mouths of patients that smoked cigars, but tobacco chewers, I cannot remember of having my attention attracted on account of this habit. In my own mind, I am satisfied that an acid of some kind produces erosion. It is not the result of excessive or careless use, or is it of mechanical abuse. The muco-follicular secretion must undergo a chemical change of which we are not quite sure—and that change materially assists in producing erosion. The molecular death, with insufficient prophylaxis of the mouth, no doubt greatly aids in the production of decalcification. I believe the free acids materially aid in producing this condition. The shining surface of the eroded parts of teeth is the worn inorganic portion of the affected teeth. It is quite probable that the diet of individuals, their mode of life, and climate in which they live may exert certain influences regarding the etiology of erosion. The calciums, chlorides, magnesiums and phosphates that are found in many varieties of food which assist materially in maintaining the various osseous structures, do not aid the teeth directly, as they cannot be classed as real osseous tissue. The essayist has asked, What shall we do to restore the teeth affected with erosion? In reply I would say, the *position, extent,* and general characteristics of each case differ; hence it would be quite difficult to say when to do this, or to do that; his methods, as stated in the paper, of restoration, are all in use by every practitioner. Extension for prevention is almost always good practice. I will say that the oxide found upon amalgam is a pretty sure preventive of erosion, but cannot be used in conspicuous cavities.

The suggestion of the essayist for some one to find out definitely what causes erosion, is quite opportune, and in fact shows an aesthetic interest, particularly so when he speaks of the specific reaction necessary to effect a prophylactic result.

Erosion is treated by many the same as caries—cavities shaped, with retention and marginal care, filled and finished as an ordinary gold or porcelain filling. The facts of erosion are dependent upon two: First, the particular facts which are revealed by direct observation; second, the general facts which are discovered by reasoning. Together they increase and mutually animate all investigatory studies. Considered separately, the first is only sterile material, the second only useless hypotheses. Pathological research cannot exist without one or the other—*it must have both*—any more than reasoning can exist without premises or without consequences. The study of erosion should be considered carefully and pursued diligently by every progressive dentist. The time may not be far distant when we can positively state its true etiology and be able scientifically to cope with erosion.

I am personally very grateful to the doctor for his scientific interrogatory train of thought throughout his paper.

Dr. H. T. Smith, Cincinnati, O.—I call the essayist's attention to the fact that erosion is of two kinds—is confined to two descriptions: erosion proper, so-called, and abrasion. Lactic acid is generally the active agent in producing it. After the article published by Dr. W. D. Miller, recording the use of silver nitrate, as a prophylactic, we have the use of paraffine as a suggestion for arresting caries, as well as for retarding erosion. Melted paraffine is an excellent agent; I regard it is an efficient agent in treating erosion, but do not believe it is to be depended on to arrest caries. I was surprised to learn from Dr. Miller's paper that silver nitrate is not efficient in arresting erosion.

Dr. C. M. Wright, Cincinnati.—Does the paraffine penetrate the tubules?

Dr. Smith—No doubt it does.

Dr. W. H. Whitslar, Cleveland—The eroding surfaces of teeth are always extremely sensitive. The acid action is only one factor in the causation of this disease. How lactic acid is produced—by the decomposition of the carbo-hydrates—we all know. The progress of the erosive action is more rapid at night, during sleep. Dr. Hamm states that erosion is sometimes found on lingual surfaces of teeth. I do not think that is often the case—indeed I may state that I have never seen a case. I do, however, recall a case, but the tooth had been rotated, so as to bring the labial surface thus attacked inward. Dr. Black says he has found only one or two cases of erosion on the lingual surfaces.

Erosion, in the old text-books, is attributed to acid secretion from the mucus follicles of the gum. It is, however, beyond question that the lips, during sleep, retract oftimes in such a way as to form a pocket, holding the salivary secretions against the neck of the tooth, favoring the formation of destructive acids. I have found the introduction of a good porcelain inlay to be the best remedy for this destructive action.

Dr. J. R. Bell, Cleveland—I sometimes use tinfoil, carried up to protect the cervical wall, in cavities or erosion. Over this I place my gold so as to conceal the tin.

Dr. H. A. Smith, Cincinnati—Erosion does not necessarily exist in all cases of extreme sensitiveness about the necks of teeth. I believe if we would seek to make our operations in gold more thorough, in these cases, we would have a larger measure of success. The operations required are difficult, and for that reason a lack of thoroughness in preparing the cavity, and in packing the gold, invites a recurrence of the destructive action. But setting aside all speculation, I think it is true that there is no disease which attacks humanity, or more difficult to cope with successfully than this.

The agent-producing erosion is undoubtedly acid. No acid, no erosion; no acid, no decay. The toothbrush does not do the mischief. No question put to me by my patients is more discouraging than this of what to do to prevent erosion. We can control the conditions somewhat if we recognize the fact that an acid, and only an acid, causes the disease. I tell my patients that eternal vigilance is the remedy. Alkaline washes are good. But until we know more definitely the exact cause, we cannot, after all, advise our patients to the best purpose.

Dr. Hamm, Chillicothe, O.—Dr. Barnes says he has not seen any cases of abrasion, excepting in old age, but I have a patient of only six years who has erosion extending back to the molars—in the superior arch, too. I attribute the condition found in erosion to the action of an acid, and not to mechanical action of a toothbrush.

I agree with Dr. Barnes in what he says as to the secretions of the sub-lingual and the buccal glands. I have not observed whether erosion does or does not exist in the mouths of tobacco-users, because most of my patients are ladies and children (but slightly addicted to tobacco). (Laughter). The sugar used in tobacco, I should think, might, by its decomposition, cause erosion. I strongly suspect it does.

I have never seen a case of acid erosion but what was sensitive. In preparing cavities on the labial aspect of the front teeth, near the cervix, I insert a small wheel-bur, after otherwise preparing the cavity, and make a considerable undercut, which I then fill with cement, also covering the entire floor of the cavity with the same. Using gold over this, I have the advantage of the non-conducting covering extending considerably beyond the confines of the cavity, thereby insuring future comfort for the patient.

I did not say I had found any cases of erosion on the lingual surfaces. I have not found any, as a matter of fact.

THE SIMPLE CASES OF ORTHODONTIA.*

BY VARNEY E. BARNES, D. D. S., CLEVELAND, OHIO.

There are many cases presenting for treatment which are, apparently, very simple and easy of correction, and yet, if thoroughly diagnosed, reveal the necessity of a far more extensive operation than was at first expected. This difference is not realized by the laity and by those dentists who do not make a complete diagnosis with the aid of accurate plaster casts, the X-ray, and physical diagnosis. These same dentists deem it sufficient to diagnose orthodontia cases with an examination of the natural teeth as they are in the mouth, where only a limited area can be seen at a time. The result is, that any tooth projecting out more than its neighbors is selected as the malposed tooth; the operator's eye becomes focused upon this one offender and all efforts to regulate are centered upon this point. Under these conditions, is it any wonder that teeth have been extracted, and are yet, in efforts to correct localized irregularities, *at the expense* and *to the detriment* of the dental arches and the patient possessing them?

There are simple cases in orthodontia where but one or two teeth are malposed, being rotated, or locked in or out of the arches. These are easy of correction and involve neither the other teeth, nor the changing of arches, nor facial contours. There are *other* cases, *apparently* just as simple, which require a more or less extensive operation, often involving all the other teeth, and a complete rearrangement of the arches; and the restoration of facial contours. The difference in the two types of cases can only be shown by the most complete, careful and painstaking diagnosis, using accurate casts, articulated as are the natural teeth. Then the teeth can be studied individually and as a whole. The face may be seen in repose, at the same time that the cast shows the teeth articulated and facial defects or perfection may be observed.

---

*Read before the Ohio State Dental Society, December, 1905.

It may be said that this cast-making and the time-taking diagnosis is unnecessary and useless in many instances. It may be in a few of these, but the casts serve as a record, and the care in diagnosis insures against failure, and one failure does more harm than many multiples of the time spent to prevent it could counteract. "Well begun" may not be "half done," but sometimes will represent more than half when compared to beginning with a wrong diagnosis.

Dentists, as a rule, are considerate of their patient's means, and *too often* suit the operation to the pocketbook instead of to the *needs of the case*. This is especially true of their orthodontia patients. These cases appear, and the operator, feeling and knowing that the patient cannot or will not pay the fee that the case should command, decides to treat in the easiest manner, *to save expense, time and trouble for all concerned;* or he may be thinking of saving trouble for himself alone. Is this humane? Is it right? Would *you* wish to receive this kind of treatment? What would you think of a physician or a surgeon who suited his treatment or operation to the fee? Are not the cases parallel? The *fee* or the *time* to be given should have *absolutely* nothing to do with the course of procedure in the case.

Simple justice demands that you operate to place the teeth and features in correct relations, and there is only one correct way for each patient. A difficult case cannot be made a simple one. Alignment does not mean occlusion, but teeth in occlusion are in alignment. The laity are ignorant of the difference, and naturally see none; all they demand is that the anterior teeth be in alignment, and look even and regular. If this can be quickly attained by means of extracting one or more teeth, they *have been* satisfied. And the dentist? Well! he has catered to the laity.

But the past few years have seen a change in this respect. The value of the first permanent molars and of occlusion is more generally understood. Much of this is due to the efforts of Dr. E. A. Bogue of New York, who has persevered for years in his advocation of the saving of first molars and for early regulation to preserve occlusion and prevent irregularities. Had his writings received better editing and illustration he would today receive much of the credit now too lavishly bestowed upon another. However, no man is the source or originator of modern orthodontia. The orthodontia of today is the result of an evolution, and many are the men who have lifted it to the high plane it now occupies.

The laity recognize irregularities from facial deformities or from malpositions among the 12 anterior teeth. The more intelligent are quick to notice the vast difference between *real* and *make-shift* corrections, and respect the operator, accordingly. They appreciate and are willing to pay for the best service, and should get it. But how about the poor or ignorant? Shall they receive the same services as the rich or intelligent? Certainly! You say they cannot afford it, or at least will not appreciate it! and you take this as an excuse for extracting teeth and simplifying (?) the case. In reality, you know you are doing that innocent patient a permanent injury. Or you may even feel that you are doing a kindness, a charity, perhaps. Are you? Suppose the patient were poor—operate correctly, preserve the teeth regardless of the fee, or if you cannot give the time, in justice to your other patients, show the patient what should be done. Make him realize that the loss of a tooth is a loss forever. If he is poor or unappreciative now, and cannot, or will not, afford the operation, will he always be so? Is there not a chance that the future will bring a change in circumstances or appreciation? And if it does, the patient will still have all his teeth and can have them regulated. If the patient be ignorant or determined on simplifying (?), still *be just* with him—show him why it is wrong to extract, and refuse to operate in any but the right way. Let the other fellow, if there be one, shoulder the blame. He will get it later on. As I have said many times, and repeat, extraction is justifiable only after other methods fail, and then only after consultation.

Extractions are not the only methods that have been used to simplify cases. Too often but a few teeth in *one* arch have been regulated, or rather put into an alignment, with the result that a partial, or entire relapse occurs. The operator is justly blamed: but orthodontia receives credit for a failure that does not belong to it. This is unjust.

The excuse often given for a partial regulation is, that most of the teeth are in proper occlusion and must not be disturbed. In reality, *these very teeth* are the ones responsible for the *more evident* malposition of other teeth.

The expansion of many temporary arches involves but a simple operation, compared to what would be necessary were the irregularity allowed to progress with the eruption of the permanent teeth. The absorption of the temporary alveolus is coincident with the eruption of the permanent teeth, which have their alveolus formed around them after eruption. If this formation can be compelled to occur about the teeth in a correct position, it is very evident that the retention will be permanent, and the case, therefore, comparatively simple.

Still another class of apparently simple cases calls for attention. These may be typified as the cases where teeth have been prematurely lost, in one or the other jaw. Nature tries to close the space, as she always does, and the opposite arch contracts and tends to come to the now too small remnant of an arch. Opposition to the insertion of artificial teeth or attempts to simplify (?) have generally resulted in the extraction of still more teeth to even up. Occlusion is permanently spoiled to make the anterior teeth look better. The bite becomes too close, eventually the molars and bicuspids are lost, far too early, and the incisors take on the function of grinders and are rapidly worn down. These are conditions that all of us have seen, or can see, if he will but look. Is it not a far more rational procedure to expand the cramped arches and hold open the space of the lost tooth? The case and the patient must decide whether that space be maintained by plate, or bridge teeth, or by bar retainers. But it must be maintained, for *all the teeth depend upon it.*

Recall, if you please, the instances in which it has been your lot to fill or treat tipped molars or bicuspids. Have not these cases caused you more trouble than others? Are not these the teeth in which pulp nodules form, or in which fillings fail, or are only serviceable in preventing further decay? Shall we go on cleaning, filling, treating, crowning and extracting teeth, and then bridging or fitting plates *after* nature has tilted the teeth and *failed* in attempting to close the spaces? Or, shall we, as progressive dentists, glorying in our profession, *dare to maintain* the spaces as soon as and whenever teeth are lost, whether they be temporary or permanent? Let us face these problems, master them, and thus preserve the remainder of the teeth in occlusion, and fulfill the real object of our profession! Further, let us watch our little patients, and see to it that their temporary arches are preserved in full until the permanent teeth are ready to assume their positions and responsibilities. If these arches are not correct, it is our duty to see that they are. Adenoids, enlarged tonsils, malnutrition and premature or delayed loss of temporary teeth are all causes of many of the *real simple cases* which require early counteraction.

Simplicity is always desirable, especially in this complex modern life of ours. Simple treatments for children, during the growing periods, magnify the results obtained in establishing the occlusion of the permanent teeth. The results are permanent and are attained before the age at which life's responsibilities begin to assert themselves.

But in our search for simplicity and ease of operation, let us not be led astray and sacrifice the *real* for the *apparent!* especially as the *apparently simple* operation, *simplified* (?) by an incorrect operation, generally proves more difficult than the correct method.

Finally, and in conclusion, let me again urge the necessity for the perfect and painstaking diagnosis, so that the simple and easily treated cases may not be confounded with those that require our utmost skill and perseverence. In the end, humanity and our profession will be benefited through our doing—simply our duty.

DISCUSSION.

DR. F. M. CASTO, CLEVELAND, OHIO—The essayist is to be commended for bringing to our notice such an important subject. I must say the paper has disappointed me a little, for nothing definite has been given to assist either in the diagnosis or the treatment of simple malocclusion of the teeth.

There are some things in the paper I agree with; but there are other things with which, of necessity, I do not agree.

I cannot quite understand the unmistakable position the doctor has taken against the other members of the profession. In the beginning of his paper he infers that many mistakes are being made in the treatment of malocclusion of the teeth, because of incorrect diagnosis by men who are unable to recognize only localized irregularities, and who have no conception of a general malocclusion, and who, under these circumstances, extract teeth, and limit the orthodontia operation to the movement of a single tooth, which, perhaps, is only a symptom of the real trouble.

Again he says: "Dentists as a rule are considerate of their patients' means and too often suit the operation to the pocketbook instead of the needs of the case; this is especially true of their orthodontia patients. These cases appear and the operator decides to treat them in the easiest manner, to save expense, time and trouble for all concerned, or he may be thinking of saving trouble for himself alone." Continuing, he says: "A difficult case cannot be made a simple one. Alignment does not mean occlusion, but teeth in occlusion are in alignment. The laity are ignorant of the difference and naturally see none; all they demand is that the anterior teeth be in alignment, and look even and regular. If this can be quickly attained by means of extracting one or more teeth, they have been satisfied, and the dentist—well, he has catered to the laity."

A little further on we find the above statement regarding the laity almost refuted, and more condemnation heaped upon the operator. The following quotation is explanatory: "The more intelligent (of the laity) are quick to notice the vast difference between real and make-shift corrections, and respect the operator accordingly. They appreciate, and are willing to pay for, the best service, and should get it. But how about the poor and ignorant? Shall they receive the same services as the rich or intelligent? Certainly! YOU say they cannot afford it, or at least will not appreciate it; and YOU take this as an excuse for extracting teeth and simplifying (?) the case. In reality, YOU know YOU are doing that innocent patient a permanent injury." Other disparaging things are in the paper which I will not take time to repeat. The essayist seems bent on making a sweeping tirade against all the profession, assuming that they are ignorant of the principles of orthodontia, and that most all of them are extracting teeth for the simplifying of orthodontic operations.

To all of this part of his paper, Mr. President and gentlemen, I disagree most emphatically. I do not believe, sir, that "dentists as a rule" maliciously, and relentlessly, extract teeth for the correction of malocclusion; nor do I believe, sir, that the profession in general do dental operations with nothing in view but the patient's pocketbook and permit the fee to determine whether the operation shall be first-class or otherwise. I know positively that the profession here in Columbus are not guilty of such practices, and so far as I have knowledge of the profession in Cleveland, and community, I can state just as emphatically, sir, that they also are NOT GUILTY.

From my own observation and experience in my association with men of our profession, I would just reverse the rule which the essayist believes to dominate, and say, as a rule, members of our profession DO NOT extract teeth for the purpose of correcting irregularities of the teeth, or for any other cause, without every due consideration being given, so far as concerns both the patient and the necessity of the case. If I did believe as he does, Mr. President, I would certainly be willing to do my Christian duty, and endeavor to give enlightenment whenever it was possible to do so.

I desire at this time to make a statement which I conscientiously believe would prove true, and that is: "If every intelligent ethical practitioner of dentistry would carefully and correctly treat at least one case of malocclusion a year, orthodontia would profit miraculously by the knowledge derived from such practice. The profession and the laity would both be equally benefited.

What the doctor has said regarding the evil effects of the loss of permanent teeth may have upon occlusion, providing the spaces are not maintained, I most heartily approve of. It is conceded beyond the question of a doubt that "occlusion is the basis of the science of orthodontia." Permit me, please, to quote from Dr. Angle: "The shape of the cusps, crowns, roots, and even the structural material of the teeth and their attachments, are all designed for the purpose of making occlusion the one grand object, in order that they may best serve the purpose for which they were intended." "Examined carefully, it will be seen that perfect occlusion is incompatible with any degree of irregularity, but that the arrangement of the teeth must be even and regular, each contributing support to the others—all in perfect harmony. Not only this, but the jaws, the muscles of mastication, the lips, and even the facial lines, will then be in best harmony with the peculiar type of the individual." It has been stated, and I believe correctly, too, by no less an authority than Dr. E. C. Kirk, that "Occlusion is the basis of all dentistry;" that is to say, upon the thorough knowledge of the physical laws, which are constantly operative in maintaining occlusion either normal or abnormal, and a strict compliance thereto, will depend to a very large extent the success or failure of all operations pertaining to the teeth and contiguous tissues. The forces of which I speak are:—

1. The interdependence of the arches due to harmony in size.
2. The influence of the occlusal incline planes.
3. Influence of the muscles, buccally, labially, lingually.
4. The lateral contact of the teeth in their respective arches.

Granting that the above statements are true it becomes quite evident that untoward results would undoubtedly follow the indiscriminate loss of teeth.

The most difficult cases of malocclusion presenting for treatment are those in which teeth have been lost, and the remaining teeth having all moved into abnormal positions in closing up the spaces.

I wish to confirm what the essayist has said regarding painstaking and careful diagnosis. It is just as important for us to make a proper diagnosis in cases of malocclusion of the teeth in order to treat them correctly as it is important for the physician to properly diagnose typhoid fever or any other disease so that the right treatment may be administered. We all realize that in any pathological or abnormal condition it is necessary to know what is wrong before we are able to determine what can be done.

In conclusion, allow me to offer a few suggestions which I trust will enable those who are "wandering in the wilderness in search of knowledge in orthodontia" to make a differential diagnosis between simple and complex cases of malocclusion of the teeth.

The first and most important thing is to determine whether or not the mesio-distal relation of the arches is normal or abnormal. This may be done by noting the occlusion of the molars and bicuspids; if the mesio-buccal cusp of the upper first molar occludes between the mesio-buccal and disto-buccal cusps of the lower first molar, the upper first and second bicuspids occlude distally or posterior to the lower first and second bicuspids respectively, the mesio-distal relation of the arches will be normal. Assuming that the upper arch is a fixed point, the mesio-distal relation may be abnormal by the shifting of the lower arch distally from a normal position or mesially from a normal position the width of one bicuspid or more.

Second—Note whether or not the arches are of normal width and length.

Third—Observe carefully whether or not there is any disparity in the relative sizes of the arches, due to late eruption, rotation, or loss of teeth or to supernumerary teeth, the arches being so absolutely dependent one upon the other that the slightest mal-arrangement in one arch will invariably react upon the other.

Fourth—Note specifically the position of each and every tooth. It is necessary that you always have in mind a typical normal occlusion in order that you may recognize a malocclusion.

Dr L. P. Bethel, Columbus, Ohio.—I feel like emphasizing the necessity of every dentist knowing occlusion and particularly those dentists who undertake the correction of maloccluded teeth, for how can they make a complete diagnosis and outline the treatment that will bring complete results if they do not know occlusion?

Complete results, the proper relation of one arch to the other, the size and contour of the arches, and normal facial lines cannot be obtained unless the teeth are placed in normal relation, or, in other words, unless normal occlusion be established.

In almost every case of orthodontia, save possibly the simplest, referred to by the essayist, one finds some complication. An incorrect diagnosis is easy, particularly for those dentists who depend simply upon an inspection of the teeth in the mouth, or know little or nothing about treatment of cases of orthodontia.

Some time ago my attention was called to such a case. It was Class II. of the Angle classification, where the lower arch was distal the width of a bicuspid tooth in its relation to the upper, with protruding upper incisors, characteristic of mouth-breathers. The dentist who undertook to correct the case apparently could see nothing beyond the protruding upper incisors and proceeded to carry these incisors backward as far as space would permit; then he applied retainers and called the case completed. He apparently made no attempt to expand the arches to their normal width, or to carry all the lower teeth forward until normal occlusion was restored. In fact, he overlooked the part that most needed correction. The result was that the occlusion was not improved, the receding chin remained the same, and the upper lip was still unduly prominent. In fact, the features were about as disfigured after treatment as before. Whether this was done through ignorance, or otherwise, I believe you will all agree that it was at least a great injustice to that patient.

To show how easily a mistaken diagnosis might be made, I will refer to a case in practice: A patient presented with permanent upper cuspids about to erupt high on the gum and in buccal occlusion on account of the space for them being closed. The other teeth as far back as the second molars were present in the arches, the lower teeth apparently in distal occlusion, and the central incisors separated on account of an abnormal frenum labium. In the majority of cases of this sort the treatment indicated is the forward movement of the incisors, and perhaps widening of the arches, to make room for the coming cuspids, and the bringing forward of the lower teeth. In this case, however, such treatment would have caused facial disfigurement, as the intermaxillary region was already as prominent as it should be. A study and measurement of the models showed that the first upper molars and the bicuspids had shifted forward, encroaching on the space necessary for the accommodation of the cuspids, from the one side, while, through separation of the centrals, the laterals encroached on the space from the other side.

These conditions indicated something more than simple treatment. The abnormal frenum was operated upon and the incisors brought together. The arches were expanded to their proper width, the molars on either side were forced back to normal position, and the second and first bicuspids carried back. By this means space was gained for the cuspids, and it was found that the lower teeth, while still somewhat distal to normal, were so only partially the width of a bicuspid.

The lower teeth were carried forward to properly occlude, with the result that full occlusion was established, and the facial lines brought into harmony with the type of the individual.

Thus the correction of an apparently simple case of orthodontia was by no means easy. Had a careful diagnosis not been made, and had the easier method of carrying the teeth forward been resorted to, or the extraction of the first bicuspids for accommodation of the cuspids, the result would have been facial disfigurement.

The dentist who undertakes the correction of cases of orthodontia assumes a great responsibility, and unless he be conscientious and thorough in his treatment the result may be disfigurement for life.

The thorough correction of malocclusion is not easy. It is a difficult task and at times taxes to the utmost the dentist's mechanical ingenuity.

It is too grave an operation to trifle with, and a case half done oftentimes is in worse shape than it was originally.

The man who expects to make a success of orthodontia must be specially prepared for it.

Dr. W. A. Price, Cleveland, Ohio.—I regret we have not had in this paper, and in the paper by Dr. Casto discussing it, more details as to treatment. Anticipation of irregularity is the important thing. One class of cases coming under our notice should command more attention from us dentists. I refer to the middle-aged, men and women of 50 or 60 even, who might be greatly benefited by our ministrations, who are often passed by. Much could be done for them, in the way of building up worn-down tooth tissue with metallic fillings, or porcelain inlays, or jacket crowns, which the newer, up-to-date dentist is coming to do for them. Correcting such occlusions as have come to deviate widely from the normal, I mean.

Dr. G. H. Wilson, Cleveland, Ohio.—I think some of the criticisms of the paper which have been made are unjust. The subject, in its essence, is, diagnosis. Extraction, I agree with the essayist, is the important thing to be avoided. Not to attempt cases we cannot be sure about, as regards diagnosis, is also of supreme importance.

Dr. B. Abell, Toledo, Ohio.—It is of supreme importance that the dentist should have a clear conception of what he is undertaking, and that he should be able to foresee the result in all its completeness, before he undertakes a case which, seemingly simple, may be, as the essayist has shown in various instances on the screen this evening, really complicated and difficult. Many dentists need to study their works on orthodontia far more than they do.

Dr. V. E. Barnes, Cleveland, Ohio—We have, times without number, called attention to the evil of extracting teeth for children. The specimens shown on the screen are only a few out of thousands to be found in any city. Dentists are not infallible. I have done things myself, in attempting to correct irregularities, I now wish to heaven I had not done.

Reference has been made, in the discussions, to cases which I have purposely omitted from mention, in my paper, because they do not come within the definition of "simple" cases.

SOME OF MY CHIEF DIFFICULTIES IN OPERATIVE DENTISTRY.*

BY R. H. RALSTON, D. D. S., CLEVELAND, OHIO.

It is not my purpose to present anything new, but that I may present, in a brief way, without going into detail as to methods of procedure, some of the difficulties in practice which every young practitioner must meet.

And my only hope for so doing is that the older men in the profession, who are more expert in the art and science of dentistry, will suggest methods in the discussion which will be helpful to us.

---

*Read before the Cleveland Dental Society, February, 1906.

I presume that in the practice of every dentist there are presented problems difficult of solution, perplexities and trials hard to manage, but we must accept them with the same spirit with which we accept the easy and pleasant ones, and do our very best under the circumstances.

One of my chief difficulties in operative dentistry is the elimination of pain, real and imaginary; the hypersensitiveness of the dentist and the nervous condition of many patients renders cutting and excavating in some cases extremely difficult.

It is true that modern methods and inventions have, to a large degree, made simpler many of our difficulties in this regard, but yet we have cases presented where our latest agencies for the elimination of pain are not applicable.

Then we have to overcome that common dread of the dental chair. Why so many people dread dental operations today, when pain is the exception and not the rule, I cannot explain, but you know the question most frequently asked is, "Is it going to be painful?"

Now, I believe it is best to be truthful and I know that the patient respects you for it, and if this question could be answered as I wish it might be in every operation, then my chief difficulty in operative dentistry would be eliminated.

And now, as to the filling of teeth, we find some cases extremely difficult, especially the preparation of cavities and the proper filling of the anterior teeth, when they are crowded and overlap and the cavity involves a part, say one-third of the incisal angle, and the caries has progressed beyond the gingiva to a considerable extent, the proper insertion and finishing of a filling under these conditions requires much care and patience.

Then again, you have had cases presented where the four lower incisors were badly affected with caries, including a part of both labial and lingual surfaces, and both mesial and distal angles are to be restored; the enamel is thin, the tooth structure of very poor quality. The proper restoration in a case of this nature is generally attended with difficulty on my part, and it is to me one of the most difficult operations to perform satisfactorily.

Another problem that we find sometimes a little troublesome is a tooth with extensive decay, adjoining fixed bridge-work. There is a difficulty in adjusting the rubber-dam that the moisture may be excluded; it is often impossible to get space by wedging, and to remove the bridge would not be advisable. Then, too, we experience difficulty in the finishing and polishing, so that we may get the proper contour. It seems to me to be a case wrought with difficulty all the way through.

Another problem I wish to call your attention to is that of children about eight years of age, when, by accident or by a fall, a part of the incisor is broken off; to make restoration with gold would be too conspicuous; porcelain would be ideal if it would stand the strain, but being a friable material, and taking into account the age of the patient, there may be a question as to its use here, with a feeling of certainty as to the permanency of the operation.

Another case for consideration is the problem of proximo-occlusal cavities of the bi-cuspids and molars, especially so, if the access is not favorable. Many of the operations here have to be performed under trying circumstances, and from my observations it seems to me that we find more failures in this class, due mostly, I believe, to a recurrence of decay around the fillings. In many cases the proper contact point is not made; instead we find a flat, rough surface, or perhaps no contact.

It is necessary that we have the proper contour to our fillings, that the gum-tissue in the interproximal space be protected and kept in a healthy condition; the wedging of food between the teeth and against the tissue causes great discomfort and much injury to the patient, and likewise is the source of many failures in the proximal fillings. It may be easier to file away between the teeth or the fillings and procure space, as some operators have demonstrated, rather than preserve the contact point, but I can not see that it is a proper operative procedure, and I believe that it works harm to the patient in many ways. A little more pains for the dentist and less subsequent pain for the patient I find a good rule.

A careful diagnosis of conditions in operative dentistry is no minor part. Unreasonable expectations account for many of our failures and the practicability or impracticability of certain operations depends largely upon observation, discretion and right judgment. The problem will arise as to the advisability of inserting a large contour filling where little of the tooth remains, or whether to crown. It requires a careful discrimination often when to restore with a filling, or when to crown. Also we need to study what filling material would be best in a given case; certain conditions indicate one and not another. Then it may call for careful consideration along the lines of mechanical principles, with due regard to stress of mastication, anchorage, etc.

There are many other difficulties which would try the spirits of our most accomplished artists and require resourcefulness in overcoming.

The necessity of taking infinite pains in all difficult operations becomes a habit—and a good one—which is carried out in all our work, if we possess high enough ideals. Our chief aim in all our operations should be the preparation of the natural teeth; and it seems to me we are in duty bound to do this. Any method, any filling, which will best accomplish this end, I think we should adopt and devote our best efforts and greatest skill to it.

DIFFICULTIES IN PRACTICE.*

BY ARTHUR I. BROWN, M. D., D. D. S., CLEVELAND, OHIO.

Therapeutically, my chief difficulty in practice has been in the treatment of root canals. Even though following the most approved methods, the results, in some instances, are unsatisfactory both in time consumed in treatment and results obtained.

I had intended giving results of numerous experiments with some of the newer drugs which have appeared lately; as far as I have gone I am not in a position at present to present that which is absolutely infallible; however, I am far from being discouraged and hope to attain results later.

In the few minutes allotted me I wish to call your attention to an innovation in the manner of disinfecting instruments and appliances used in and about the oral cavity in dental operations.

Dr. Harlan claims the credit of first introducing this to the dental profession; however, I was so favorably impressed upon first reading about it, its ease and quickness of application, that I determined to investigate thoroughly, and will proceed to give method in detail. Secure a copper pan or dish holding at least a quart, and thoroughly polish the inside with any good metal polish, add water—ordinary tap water; it is not necessary to boil water, though you may boil and filter if you choose; allow this to stand for three and one-half hours. The action of colloidal copper renders it sterile. Now, for every ounce of water add one-half grain of chemically-pure dried sodium carbonate; this in conjunction with the copperized water will destroy all germs. Place your instruments in this solution and scrub them with a clean brush, and right here, no matter what method you employ in the sterilization, all instruments, burrs, etc., should be scrubbed, even though it be only with ordinary tap water and soap, for the obvious reason of removing the adherent debris.

---

*Read before the Cleveland Dental Society, February, 1906.

After this scrubbing transfer to another similar solution and rinse, then dry with clean linen or antiseptic cotton. This method is efficient and inexpensive; the cost of C. P. dried sodium carbonate is about 20 cents per pound, sufficient to make 90 gallons of the solution.

The surface of copper exposed to the water must be polished each time fresh water is added; therefore I prefer to polish pans and add water at night before leaving office. Let water remain in pans all night; in the morning, upon the addition of sodium, the solution is ready for use. The amount of colloidal copper in solution is approximately one part of copper in four million parts of water.

The anti-microbic action of infinitesimal amounts of colloidal copper is wonderful, as evidenced by the destruction of ten billion bacillus typhii in less than two hours.

By colloidal solution of copper is meant the solution of metallic copper that takes place when a bright copper surface is brought into contact with water.

In epidemics of typhoid fever such as we are subjected to in Cleveland, the drinking water can be sterilized by allowing it to stand in a copper vessel for three hours. Chemical experience has shown that this amount of colloidal copper is harmless when taken into the system.

DIFFICULTIES IN PRACTICE.*

BY J. H. BURROWS, D. D. S., CLEVELAND, OHIO.

One of my chief difficulties in practice is the handling of children and their parents. How often parents appear in our office wishing immediate extraction of some offending tooth for their child, when it could be readily repaired for a very small fee. But no amount of persuasion can induce them to have that repairing done, because, as they put it, "It will have to come out eventually, anyway, and they would rather the child would lose it right now than to pay for filling it, and then again pay for extracting it." Every parent ought to know that at the age of six, or thereabouts, the first permanent molar makes its appearance immediately back of the deciduous molar. But the majority are hard to convince because they think that in order to have a permanent tooth a deciduous tooth must come out, and that you are mistaken in your judgment. Personally, I keep charts to show parents, and even then they are not convinced. This total ignorance of the public in regards to the teeth is deplorable, and how best to educate our people in the care and preservation of the children's teeth is a question yet to be solved. The question, "What should be done with the teeth of children?" often resolves itself into one of, "What can be done?" Much depends upon the tact of the operator and the disposition of the child. Some children are kind, confiding, and willing to do whatever we request of them, while others are by nature antagonistic, rebellious, and unmanageable, except by force; the first thing in order, of course, is the relief of pain. Beyond this, little should be attempted at the first visit, except to cultivate the child's acquaintance and put him in such a frame of mind that he will not be unwilling to come the second time.

My own practice has been to fill children's teeth with either amalgam or cement. Success, however, depends not on our choice of materials as on our being able to prepare the cavities and exclude moisture while the filling is being inserted. I use Ames' oxyphosphate of copper cement in all molars that I can barely cut out grooves and fissures and have no depth for retention in any way. I put a piece of tin-foil over the cement and have the child bite down on it; this gives the occlusion and also protects the cement from the saliva until hard.

---

*Read before the Cleveland Dental Society, February, 1906.

Another one of my difficulties in practice is to keep cavity dry where decay occurs near the gum margin on molars and extends in a crescent form, following the outline of the gum along the surface of the tooth. I find that most of my fillings fail soon at this point on account of not being able to control the gum tissue and moisture. I hope that the discussers will enlighten me a little on this point.

DISCUSSION.

Discussion of Papers by Drs. Ralston, Brown and Burrows. **Dr. Ziegler**: Are all cases difficult in operative dentistry or are they merely routine work? The practice of dentistry as a whole is not an easy profession, and when it comes to working on living tissue, all cases are complicated. We have prepared ourselves for this work. We gave our time and energy to learn how to do these things, and so things which seem hard to the ordinary man should not seem so to us.

Dr. Ralston starts out by placing his finger on the vital spot of the whole profession: *the elimination of pain.* I do not think, with all the modern improvements we have today, that it is necessary for patients to suffer a great deal of pain. And in very painful operations we have anaesthetics to fall back on. We should find some means to allay difficult cases. When we come to imaginary pain it is simply a case of one mind domineering over another.

I will tell you of a little experience I had a few days ago that follows in this line: A gentleman came into my office and said that he had a very bad toothache and that he had been under the care of a dentist in New York City, and asked me if I could not relieve him. I asked him where the pain was. He did not know exactly. So I took my mouth-mirror to examine his teeth. He jumped out of the chair before ever I touched him. Every time I touched the tooth with the explorer, he jumped. I said to myself, "Here is a man that I will never see again." So I said to him: "You are making a fool of yourself. I cannot work for you. I have not touched a vital spot in your mouth. You evidently have no confidence in me." He looked at me and said: "I have been dead with pain for the last two nights." Then I opened the cavity and put a dressing in it, and the man never moved. It was simply a case of imaginary pain.

The doctor says that the question most frequently asked is, "Is it going to be painful?" I always try to place my patients in such a position that if I do hurt them they are able to help me. I always tell them that I do not know whether it will be painful. I do not believe that it is necessary to say that it will or that it will not hurt them. I think you should prepare their minds so that if it is going to hurt they believe that you will do all you can to obviate the pain.

In going on with his paper, he speaks of anterior teeth where they are crowded and overlapped, etc. That operation does not seem to me as being particularly difficult. It depends, of course, on the preliminary preparations, and that is where we may save or make ourselves a great deal of trouble. If the teeth are overlapped and the cavity extends back over the gingiva, pack cotton between the teeth, even if it is necessary to have your patient come back two or three times to operate. For cavities extending below gum line take a brass wire and put it along the gum just as far as the cavity extends.

In speaking of teeth with extensive decay adjoining fixed bridge-work and the difficulty in adjusting the rubber-dam so that the moisture may be excluded, operations of this kind are all eliminated by our ability in performing them. What is difficult for one is comparatively easy for another. I cannot see that this presents any particular difficulty in doing the work, especially if you have a cavity in the anterior part of the mouth. It would be as easy to use the porcelain as the gold, especially if you could not keep it dry.

In the next paragraph he speaks of "children eight years of age, when, by accident or fall, a part of the incisor is broken off." He says "to make restoration with gold would be too conspicuous; porcelain would be ideal if it would stand the strain, but being a friable material, and taking into account the age of the patient, there may be some question as to its use here, with a feeling of certainty as to the permanency of the operation." I saw a case like that today. This case, I think, would be a typical case for porcelain filling. I should not hesitate to put gold in a child's mouth if the child could endure it, unless the tooth was broken off in such a way that gold would be conspicuous. I have one or two cases where I have used porcelain. I have one case that has been doing excellent service for two years.

Speaking of proximo-occlusal cavities of the bicuspids and molars, this is just merely another case where it is necessary to make your preliminary preparations. If the bicuspids are crowded, spread them. Have your patient come back two or three times. They would much rather come in several times and have an easy operation than to have a filling that would be uncomfortable after it is in, and it would give you a great deal more trouble in the end.

In speaking of the recurrence of decay, I wish the doctor, and all of you, could have heard Dr. Black's illustrated lecture. If we would follow his method we would have less return of decay. I cannot help but speak of it here. To me it was the best lecture I have ever heard. It left a lasting impression with me.

The doctor speaks of diagnosing cases where he is in doubt whether to put in a filling or to crown. Don't crown when in doubt. I think crown work is one of the most beautiful and useful works that we have, if done properly. In a large cavity where I used to crown in the past, I prepare my porcelain inlay with a pin. As long as they give me that service, I cannot see why I should hesitate to use them. I was criticized only today for using a pin in porcelain work. I do not believe that with a large bulk of porcelain you weaken it enough to make any material difference. I think the doctor has presented this subject very well. But we cannot judge an operation by our own standpoints. An operation which is hard for us may be comparatively easy for another man.

We must differentiate between so-called difficult cases and routine practice.

Dr. Sykes: Regarding different methods of sterilization, Dr. W. D. Miller says that he used 5 per cent. solution of carbolic acid. With this solution, it required one hour's time to sterilize, and even results were often uncertain. Then he tried 10 per cent. solution peroxide of hydrogen, which he found next to carbolic acid. Five per cent. solution of trichlorphenol, he says, requires one hour to sterilize. The essential oils were found utterly valueless. Lysol was found about as efficient as 5 per cent. carbolic acid solution. He says that formaldehyde gas is also very efficient. He also found 5 per cent. solution of bichlorid of mercury very reliable in 15 to 20 minutes, but its injurious action upon steel makes its use very objectionable. He concluded his experiments by saying that boiling water with two per cent. solution of sodium carbonate, was the best because of its efficiency, cheapness and simplicity. Immersing instruments, after careful brushing, in this solution and boiling briskly for five or six minutes, produces perfect results. This is the method used at Lakeside and many of the other hospitals.

I use, myself, a flat pan and boil instruments thoroughly for five or six minutes.

Patients appreciate cleanliness. A lady came into my office one day looking for a clean dentist. I have known patients who have been to their dentist and found things not very clean and have left that dentist. It is very important for us to be clean. Our patients observe these things. I remember this subject was up for discussion a year or so ago and someone asked the question, "What do you do when a patient first comes into your office?" Some gentleman said that one thing he always did was wash his hands. I believe it was Dr. Price. I thought that was a very good suggestion. Better still, wash your hands in good sterilized water.

Dr. Barnes: I think I would take a little exception to what was said by Dr. Zigler. These cases are perhaps not difficult to him, but I think to the average man many of the cases are difficult. Of course we would need a special case before us to decide just how we would proceed in that particular case. I recall one about the management of the child, and especially the management of the parent. I would advise you to keep the child in the operating room and the parent in the outer room, and if possible, at home. You can appeal to a child's pride. There are very few children but have more or less pride. You might have some little chum come with the child. If you can work upon the pride you can usually do something with the child.

Dr. Zigler speaks of the gentleman who came into his office and acted like a baby about the pain which he was suffering. It was imaginary pain; there was no pain. I call to mind one or two cases which I have had where I have taken the mirror to examine teeth and the patient almost jumped out of the chair. Men do this—not women. They faint away before you have touched them. Still, for those same patients, when I could win their full confidence, I have done many difficult operations. To those of our patients who have confidence in us we can make them believe that they do not suffer pain. One good way, in doing our work, is to draw the patient's attention from the work in hand. Don't talk about the work. Talk about the weather; anything but the work. If you can do that, you can accomplish a good deal, not only with a child, but with grown people as well.

I can realize the difficulty of a young man starting out in practice and not having anyone to go to at the time to give him the information which he desires. He has not passed over the case often enough to know that they don't amount to very much after all. He goes to bed and thinks about them all night. Let him go ahead and do his very best and these difficulties will be surmounted, and the next one will be easier and easier, and by and by he can say that these things are not very difficult after all.

A lady once said to me: "Dr. Barnes, I had a dentist once who had no sympathy. He would use cold air upon my teeth when he could have used warm air, and cold water when he might have used warm water. He did such things as that and I could not stand it." If we are guilty of such things, let us cut them out.

Dr. V. E. Barnes: The most of my operations are with children, and in that way I have come to handle them, I think, pretty well. I think I have but one patient that I cannot handle; that child I have not got the confidence of yet. The chief reason is that the child is a spoiled child. The child has no one to go to. The mother is a society woman and the child's confidence has never been gained at home. All the other children I have been able to handle so that they do not suffer. I believe in telling a child when I am going to hurt it. I say, "Now, my dear, this will be hard for you and hard for me. If you will help me it will be much easier. Now, are you all ready to help me?" In nine cases out of ten they say "Yes." Make them feel that what you do is less than you fear it will be. If you do this you have their confidence.

One reason dentists have trouble with children is, they take the child after school or on Saturday morning. They cannot do their best then. They are tired or they are losing play on Saturday or they are mentally or physically exhausted after school. Let the parents understand how serious the operation is and tell them to let you have the children in the morning when they are fresh and you are fresh. If those teeth are worth saving, they are worth saving and should not be left until everything else is taken care of. We will be judged by the way we treat children, and our practice is built up by the way we treat children much more than by the way we treat old folks.

Another thing, in handling children, if you can show them some of the mechanical things about your office which seem wonderful to them, they get interested in them and get their mind off their pain, and you will not have near the trouble you think you are going to have.

It is wonderful what you can do with children if you get a little chum in with them. Many of them would not groan for the world. Let the children know that we are doing our best; take them when they are fresh, and not when they are tired.

Dr Ambler: I want to say a few words regarding the effect of the mind upon the nerves. When Dr. Price first commenced making radiographs, I had a patient who imagined that there was the root of a molar tooth still in his jaw. I told him there was no root there and sent him to Dr. Price to have a radiograph taken. The doctor took a radiograph and told him that there was no root there, and he also sent me one of the radiographs, and I said, "There is the radiograph; Dr. Price says there is no root there." The next day he came back and told me he believed the root was above instead of below. He had made a mistake. I said I did not think there was one there. "Oh, yes there is, and it aches." I said: "Well, the only way to settle that is to go to Dr. Price and have a radiograph taken." Dr. Price said: "I will send this in and you can go and see Dr. Ambler. When he came I said, "How is the root?" He said it had been troubling him some. I told him there was no root there, and the radiograph showed it. That patient went away and he never complained of the toothache after that.

That shows the effect of the mind over the nerves.

I found a pretty good scheme in controlling children. Never use the word "hurt." If anybody comes with them, tell them not to say "hurt."

Dr. Lodge: The difficulty in the practice which I have to contend with (aside from the difficulty of collecting my accounts) is perhaps the difficulty that Dr. Brown spoke of, that of opening and filling root canals. I have made a great many observations within the last few years along those lines, and I am very thoroughly convinced that my greatest difficulty is the proper opening of root canals. I am making use of the X-ray, as some of you know, and in that way I have been able to see some of the work of the other operators, and I find that it is a very general difficulty that many of the canals are only partially filled. In molars, operations are seldom performed as they should be. It is a great deal more serious, I think, to fail to fill the canal to the apex than many of us give it credit for being. Many troubles that patients suffer are due to improper filling of root canals. The patient may not associate the trouble with the operation because of its having been done so many years prior, and for that reason I think that we often do not attach the trouble to our own inefficient service.

Dr. Brown: I believe in honesty, I believe in consistency, and I believe in telling the truth to children. Never exaggerate operations before children if you are going to operate on them. Give them to understand that if it is going to be a difficult operation, that it is difficult, and that you will perform it with skill and as carefully as possible, and then never betray your children any more than you would your wife.

A man came to my office with his little girl and asked me to extract one of her baby teeth. I looked at it and I saw that it was the first permanent molar, and told him so. He said, "She never has shed it; I know that it is her baby tooth." I told him that it was not, and that I would never extract it. He said, "I guess I ought to know; I am her father." Well, I had nothing to say against such logic, but I would not extract the tooth. He went across the street and had the tooth extracted.

Dr. Suhr: I think that if we want to cater to doing work for children, we will have to devote a great deal of time to them. I think that when a child first comes into the office we should make friends with him; speak about dogs, or toys, or anything. If they are school children, speak about the work they are doing in school; if they are interested in music, speak of that. For the first two sittings do not try to do much work, but just make friends with them so that you may gain their confidence.

Dr. Terry: I always expect to be able to get along with children, simply because I love them. If a child comes to me to have work done, I have in my office a number of little pictures of other children that have been there. On the back of each picture I have a little record of everything that I have done for each child. I get them out and see if they know any of them. Then I explain to them about these children and get them interested right away. I have parents who say that their children tease to come down. If I could only handle the old people half as well as I do the children, I would have no trouble. Just be a child with them and it will do you good as well as the child.

Dr. Teter: In sterilizing instruments, I think that boiling water is to be depended upon. Being at the hospitals considerable I notice that that is the principal method of sterilization. I use about a teaspoonful of sodium carbonate to a quart of water. It leaves a little coating, but if that is rubbed with a sterilized cloth, it will give the instruments a very nice polish. You cannot use the boiling water for sharp instruments. For them I use 25 per cent. carbolic solution, laying the instruments in it for four or five minutes. Towels from the laundry are practically sterilized. I notice in the hospitals that they use towels which have been ironed, which makes them perfectly sterile.

Dr. Whitslar: I think, perhaps, one of the most difficult subjects we have to deal with is the diagnosis of cases. One of the things that confronts us is that of an abscess.

For sterilizing, I use formalin and alcohol for sharp instruments, using equal parts of each, allowing the instruments to remain in the solution for a few minutes. With other instruments I scrub them with sapolio and afterwards boil them with washing soda in the water.

Dr. Stewart, London, England: It indeed affords me very great pleasure to be with you again. It has been six years since the last time I was here. We do not come in contact with one another in England as you do in America. As I have not heard the paper, it is hard for me to say anything about it.

I have a case very much like the one which Dr. Whitslar mentions. There was an abscess came over the tooth, and the tooth below was missing, and the first molar had elongated somewhat. We had several consultations with medical men of England about the tooth, but we could not tell just what was the matter with it. We put the young man under a general anaesthetic and made quite a large incision in the jaw, but we could not find anything in the shape of a diseased tissue or bone. We packed it and renewed the packing every day, and the swelling went down. About a week before I left, the prognosis of the case was very favorable. I have since got a letter to say that the swelling has returned. But there are difficulties in that line. As I heard one man say, "You show me a man who never has any difficulty and I will show you a fool."

When people ask me my opinion of American dentistry, I tell them that we have no American dentistry. There is no such thing as American and English dentistry. There should be no national feeling in the matter at all.

I come from this side of the water, and I am proud of it. If you will make yourselves like a veritable sponge, absorbing from every nationality, you will find that every nationality will give you something that you have not got at home. Even in slow old England we can give you some ideas to think about, if not to take away. The institutions that they have in London are outgrowths of centuries. You could not transfer London systems here any more than you could transfer your ideas to London.

DR. WEAVER: I think our biggest difficulty is the filling of root canals, and some of us do not want the fact known that we are using mummifying paste. In my early practice I had, as we all have, root canals that I thought I could not fill perfectly. I had the pleasure only about a week ago of opening up one of those which I put in about six years ago, and the dressing and mummifying paste was simply as fresh as the day it was put in. It was a molar which I was positive that I could not fill. I do not think that anybody can be positive that root canals can be filled perfectly. In all this time, not one of these cases, to my knowledge, has proved a failure. I am not perfect, and I want to know whether these things are coming out right or not. I have not had any trouble to my knowledge in a single case since I started, where I used mummifying paste.

DR. SIDDAL: I have not yet reached that stage where the difficulties have all been done away with, I am sure.

I just want to speak of one thing which I have used for a number of years in the treatment of putrescent teeth. It was first suggested to me by Dr. Henry Barnes; that is, sodium dioxide. With sodium dioxide I have been able to surmount obstacles which before seemed insurmountable. I do not think there is any other agent or any other method of thoroughly cleaning out root canals and pulp chambers.

DR. OWENS: What appear to be difficulties to some will not be to others. The first thing to do to overcome difficulties is to face them squarely and do what is right. Do the best you know how, and do it wisely. Think over your subject and then don't shirk, but do it. You will find after while that what appeared a difficult operation will seem simple. When one depends upon others for information I don't wonder that they do not know what to do. I hope that what Dr. Weaver says about 75 per cent. of the dentists using mummifying paste is not so. I think that where mummifying paste has been used, the patient will sooner or later have trouble with the tooth. In cleaning out the root canals, I do not know of anything better than peroxide of hydrogen. You can use it like water, or you can wipe out the canal with tincture of iodine and dismiss the patient for a day. The next day you can clean them out thoroughly. You have to do it carefully and thoroughly to the apex. If it is possible, run the brooch through and then twist it so the hook catches on the edge of the tooth. Never go beyond the apex of the tooth. If I get the tooth clean I will let nature do the rest. The second time, unless it is a very bad case, I put a temporary filling in the tooth. Pack it with a little piece of medicated cotton. After that I pack the medicated cotton with creosote. The cleaner it is kept, the better. It is very seldom that I treat a tooth a third time. A temporary filling should not be allowed to remain in the tooth two or three weeks. You are thus allowing that temporary filling to become infected. The sooner you fill the tooth the better.

In regard to the treatment of children: I think that the confidence of the child is the first thing. Another thing is the education of the parents not to leave the child's teeth until the child has to remind them of it by crying. In a number of cases, where I have succeeded in educating the parents, the children rather like to come to have their teeth filled.

Dr. Ebersole: I have been very much interested in what Dr. Stephan has had to say. There are very few canals that cannot be opened by following his course of treatment. The great difficulty is that people have not been taught to appreciate the treatment and filling of root canals. That is the most difficult work that we have to do, and requires the greatest skill.

Possibly I am mistaken, but I believe that the men who are doing X-ray work for us will bear me out in the statement that there are fewer men in the profession filling root canals successfully than there are putting in gold fillings successfully.

In speaking of the handling of children, one or two have said that they would use force. There are possibly a few cases where that is admissible, but I believe that it is very rarely good policy to use force. I don't believe that a dentist has any business to handle a grown person or a child roughly or show his temper with them. The moment he loses control of himself he is unfit to handle that case. It may be permissible to use force if the child is "full of cussedness," as someone has said.

Dr. Stephan speaks of receiving pay for filling teeth. I believe in taking pay for teaching that child that you are its friend. I have had children come into my office three and four and five times. I have had a few cases in which it has been necessary to give children a general anaesthetic to accomplish anything at all with the teeth; but I would not allow that to be done in my office. I have said to children that could not be controlled in any other way: "If you will not do this right, we will have to go to your home and have the family physician give you something to put you to sleep to do the work." It is not right to frighten children. The great trouble is that parents lie to the children. Do not tell the child that you will not do this or that, and then attempt to do it. The fear of children is great.

I have a case in mind that some of the members of this society will remember—a grandchild of one of the gentlemen who presented himself to have some work done. He was a big coward. The dentist doing this work had all kinds of trouble. Then the little granddaughter was sent to me for the extraction of a tooth. She wanted to have it done, but was so thoroughly frightened that I spent six hours at different times and was unable to accomplish anything with that child, and finally was compelled to go to the residence and give the child an anaesthetic to have the tooth removed. That child today will have an operation with perfect lack of fear.

I think that no one thing has helped me as much as the care of children's teeth. I do not believe in excluding the parent from the operating room. I make it a rule to do just a little temporary work the first time, and then suggest that it will not be necessary for the parent to accompany the child the next time, and in that way overcome that difficulty.

Dr. Woodbury: Often it is very difficult to get a good impression of the tuberosities of the upper jaw. I take a spatula and place my plaster over them before inserting the tray, and I think by doing that you will always get a good impression.

Speaking of abscesses, I want to speak of one as a caution. A woman presented herself, with very severe pain, which she had been suffering for weeks. I thought it was in the upper bicuspid, which had a gold crown on, but in looking over that side of the mouth, I determined that it was the first molar. With ordinary applications and treatment for relief of the pain, I got no results. To determine whether there was an abscess it was very difficult to do. I sent her to Dr. Lodge for a radiograph. He reported that there was an abscess over the lingual root and thought that I would get relief by opening up and getting a drainage through the tooth, but, to my astonishment, I found the nerve alive. The nerves were removed and the canals filled. She was relieved of the pain. I speak of this only to call your attention to the fact that what we have been considering in our radiographs as abscesses, may prove sometimes not to be.

Dr. Acker: I want to take exception to one thing in Dr. Ralston's paper, and that is that our chief aim should be to save the natural teeth. I think, of course, that we should try to save the natural teeth generally; but our chief aim should be the patient's general health. The general health will be better without the teeth that cannot be made comfortable.

Dr. Spargur: I have a thought along the line of this matter of charge. It seems to me that the one thing that distinguishes the professional man is the fact that he is willing to work and give part of his time and his skill for the betterment of humanity without considering the financial return, and I believe that the man who handles the case just for the money that he is going to get out of it might a great deal better leave it alone. It is impossible to go to the end of a root canal in one sitting. I spend hours and hours in getting to the end of root canals. I agree with Dr. Stephan that all canals can be reached with perseverance. Haste and good service do not mix in our business.

About handling children. Like most of us, I have had my troubles with children. I have come to the conclusion that kindness will win almost everything in this world, and I have never met a child so ill-trained but what I could reach it with kindness. I have spent sitting after sitting with one child, but when I finally won that child, the rest was easy. This idea that the mother or the father should accompany the child is not right. I have in mind a case of three children with a very fond mother. They were 13, 14 and 15 years of age. They were very small children in experience. The mother would sit within a foot of the chair, sometimes leaning over the chair, with tears in her eyes. After I had worked with that family for some little time, I suggested to the mother that perhaps I could get along better with the child if she would send their nurse. The mother's face lengthened. She left the office. It was three or four weeks before she finally came back to the office. I explained to her the reason why I had made that suggestion. The mother still comes with the children, but every single minute I spend with the children is paid for.

About four or five months ago a mother brought a little girl to me to have some teeth filled.

For the first three sittings I did absolutely nothing. I spent from 9 until half-past ten three different mornings with that child. The child was simply incorrigible. Whether I hurt her or not, it was the same thing. The mother sat in a chair with tears rolling down her face. I simply charged up the time. I think it was the fourth time that the child came into the office, I filled quite a painful cavity in a lower first permanent molar. During all that time there was no protest from the child. The mother did not have to weep that morning. Two or three days afterward I saw the grandmother. She said: "So-and-So got along very nicely, I understand?" I asked her what was the reason and she said, "Talk to her mother." So I said to the mother: "What happened to the little girl?" The mother then told me that the little girl had said as they left the office: "Now I am going to spend that dollar grandma gave me. She said that if I was real good and did not say anything while the dentist filled my tooth I could have that dollar." Since that time the mother has not had so much sympathy. One good way of helping children is to give them a mirror and explain to them just what you are doing. Just say to them that this little place here is going to hurt. Do not tell them that it is not going to hurt. That has enabled me to handle children, simply because I say to the child: "Now, George, I am going to tell you the truth every time. When this is going to hurt, I will tell you so, and you take the little glass and look at it." I never had a minute's trouble with that child, and now when he comes to my office he says: "You are going to tell me the truth, aren't you?" Always tell them the truth and give them a hand-mirror, and let them watch you and see what you are doing.

SUGGESTIONS

THE PERFECT RETENTION FOR GOLD INLAYS.

Dr. A. H. Fleming, Spartanburg, S. C.

The first step is, get a good matrix, in pure gold, 3-1000 of an inch in thickness. The matrix is put into position and filled with semi-hard modeling composition, which is packed into the matrix with a flat instrument and allowed to cool or become hard, and then removed and invested in a good investment material. After the investment has set it is warmed, and the modeling composition is removed.

We now have a fair idea of what the contour is to be, so the next step is to build a core for the inside of the inlay which can be removed from the back when the inlay is completed. This core is made of fine soap stone with one-tenth plaster of paris, and is worked to a stiff consistence with alcohol, placed in the center of the matrix, and trimmed so that it nearly fills the desired contour.

This core is then covered with moss fibre gold and the proper contour is built out in this plastic material. This is then covered with a little cream borax and the solder is placed on this. After this has been done, the whole is placed on a wire gauze, the flame is applied from beneath, and the investment is heated very slowly. When the investment and core have been dried out thoroughly, more heat may be applied from beneath, and this is increased until the solder has been melted, at which time more should be added until the moss fibre gold has taken up all that it will; this it does as a sponge takes up water. When the moss fibre gold becomes saturated you will notice the surface begins to have a solid or glazed appearance. At this point the flame should be removed from beneath and a slow-light flame wiped over the surface of the inlay, which will smooth the surface just as glazing smoothes the surface of a porcelain inlay.

The inlay is now finished, and all that is required to make it ready for the tooth is to grind it down to its margins and polish, then remove the core.

The investment is removed, when the margins of the inlay can be easily seen, and the overlapping gold is cut or ground away and the edges smoothed with a fine disk. The inlay is polished and the core removed from the back, which leaves a hollow inlay and a hole that is larger at its base than at its opening, giving additional strength when the inlay is set.

The cavity should be undercut and thoroughly dried. The inlay is dried and filled with cement, the cavity is also filled with cement, and the inlay is forced into position and held firmly until the cement has set. You now have the best and strongest filling that can be made.—*Dental Cosmos.*

REASONS WHY PORCELAIN INLAYS SHOULD BE USED IN POSTERIOR TEETH.

G. C. Marlow, Lancaster, Wis.

(1) Durability—They will not wear out when exposed to mastication, neither will they deteriorate with age

(2) Compatibility or non-irritant to pulp tissue—We can use porcelain in close proximity to the pulp without disagreeable sensations from thermal changes, thereby saving many pulps that would otherwise necessitate devitalizing.

(3) Strengthens the frail walls of the tooth—The union of the cavity wall and inlay by means of the cement is a decided support to the frail tooth structure.

(4) Use of rubber dam, as to time—I never knew what punishment was until I sat in a chair at a dental meeting, and had a gold filling pounded into a cavity in a molar, with one of those painless electric mallets. I do not wish to throw any slurs at the gold workers, for some of my best friends, and some of the leading men of the profession are very adept gold workers and have elevated the standard of good workmanship more than any other class of workmen.

(5) Wide range of usefulness—It is hard to realize that inlays can be used so generally in the mouth. There is no place that a gold or amalgam filling can be used that it would not be practical to use an inlay. In fact, the average practitioner can insert an inlay in a posterior or buccal cavity that will be more durable than either gold or amalgam.

(6) Choice of color—Porcelain is the only filling material in use that gives us a choice of color. It is true that we are not always able to get a perfect match to the tooth substance, but we may match at least 75 per cent. of the cases, and that is a better showing than leaving out the color problem entirely as has been done heretofore. I am looking forward to the time when some noble brother of the profession will come forward with a complete solutin of the color problem.

(7) Cleanliness—This is a point that is very clear to porcelain workers. Food will not adhere to porcelain fillings. If it is deposited there, it is very easily removed.

(8) General appearance—There was a time when our patients were desirous of a display of gold, but that time has gone by. As an illustration: Last winter a young lady came into the office, and on examination I found 10 cavities in her upper teeth. I recommended inlays and she had them put in. Last week she came back, and an examination revealed 12 cavities in her lower teeth. She said: "Now, Doctor, I want you to use inlays in all those cavities; I like them so much better than gold."—*Dental Review.*

PYORRHEA ALVEOLARIS.

T. A. Hardgrove, Fond Du Lac.

The steps necessary to a cure are thorough removal of the deposits, surgical cleanliness of the parts, a fixing of the afflicted teeth to obtain rest, and some medicinal agent that will assist nature to arrest the disease and to regenerate the tissue.

After a thorough removal of the deposits the pockets and surfaces should be thoroughly washed or flooded with warm lactic acid, full strength, or trichloractic acid, 5 per cent.

Obstinate cases may require radical treatment. In cases where the pus seems very persistent, it may be due to a little necrosis, and in order to provide a better drainage an opening should be made at the bottom of pocket through the gum. In cases where the tooth will not tighten it is a wise plan to devitalize the pulp and fill the root canal, and in still more obstinate cases it is almost a sure method to extract the tooth, slightly deepen the socket, and replace the tooth in the deepened socket and gain a new union. Massaging the gums with sulphur three or four times a day has been advised by Dr. Harlan, or a paste may be made from the following formula: Boric acid, 2 oz.; tannic acid, 1 oz.; glycerine, 1 oz., and tincture of cantharides, 20 gr., the latter being preferable where there are many amalgam fillings present, as the sulphur may have a discoloring effect upon the amalgam. A prescription should be supplied to the patient for an astringent, antiseptic, stimulating mouth wash, to be used daily.

The tooth brush may be kept sterile by taking a large-size test tube and constructing it about one inch from the bottom, providing it with a rubber cork as a stopper and placing a little formalin tablet or formaldehyde in the lower chamber and the brush in the upper chamber. It will then become sterile without injury to the brush.

Before concluding it may be wise to speak with reference to fees regarding this class of work. We may not all have patients who are able to pay us ten or fifteen dollars an hour for our services, but it is possible for any dentist to obtain three, four or five dollars an hour, and a good many practitioners can afford to work for that fee.—*Dental Review.*

GENERAL RULES FOR CAVITY PREPARATION FOR GOLD INLAYS.

T. P. Hinman.

The cavity preparation for gold inlays differs from that used for gold fillings. These cavities must contain no undercuts and should be so shaped that when the matrix is formed it can be withdrawn from the cavity easily and without changing its shape. This is readily accomplished in the ordinary approximo-occlusal cavities in the molars and bicuspids, but may be quite difficult in the compound approximo-occlusal cavities that do not include the restoration of the cusps. A few general rules will be laid down.

1st, The cavity must be formed with enough *draw* to allow an easy removal of the matrix. No undercuts are admissable.

2d, Cavities should have a flat floor, or one nearly so, i. e., the floor should be at right angles with the axial wall.

3d, The cavity should be so formed that when the inlay is in place without the cement, it cannot be dislodged by direct pressure on the morsal surface. This is accomplished in approximo-occlusal cavities by making a large dovetail on the morsal surface. This is a system used by nearly all the modern cohesive gold operators.

4th, Cavity margins should be carefully polished before attempting to make a matrix. This should be done with cuttlefish disks, because if any sharp corners be left the gold is liable to be torn during the process of making the matrix.

5th, Cavities in bicuspids and molars should be extended well buccolingually.

6th, Do not attempt to inlay a cavity in the approximal surface of bicuspids or molars where no morsal anchorage is obtained.

7th, Very deep-seated cavities should be partially filled with cement before making the matrix, because if matrices are attempted for these cavities without previously partially filling with the cement, tearing of the matrices is almost sure to occur to such an extent as to ruin it.—*Items of Interest.*

A METHOD OF MAKING THE RETENTION OF INLAYS IN THEIR CAVITIES MORE SECURE.

C. B. Rohland, Alton, Ill.

The method is very simple and is adapted to almost every conceivable cavity to which the inlay principal is applicable, and consists simply in fostering into the matrix a core of some material of proper shape and in proper position, which, after fusing, may be removed from the finished inlay, thereby leaving a cavity or cavities of such size and shape, and in such positions as may be best adapted to the purpose.

The same principle is also well adapted to the making of gold inlays of the matrix and plastic gold variety. In these cases, as the matrix becomes an integral part of the inlay, it should, after burnishing, be strengthened with high-grade solder, replaced in the cavity, or invested, according to the method employed, the bottom filled up with a ball of asbestos, or asbestos moistened with plastic gold, not too solidly condensed.

After soldering, adjusting and shaping, the bottom of the matrix may be opened, the asbestos removed, which will leave a cavity excellently well adapted for retention of the cement lining.

In order to facilitate the handling of gold matrices, reduce the danger of bending out of shape and render unnecessary the investment of all but the largest and most complex, the matrix may be stiffened without danger of changing its form, by painting the underside, with a thin mixture of cement powder and high fusing porcelain, like Brewster's XX.

The heat required to fuse the Jenkins body will "cake" the coating and bring the mixture just to the verge of a biscuit fuse. This coating will stiffen the matrix so it may be handled with as much safety as platinum, and being friable, will not interfere with the removal of the gold from the finished inlay.

FLOWING SOLDER.

Thos. P. Hinman, Atlanta, Ga.

There is no step in the construction of an inlay that requires more care than flowing the solder, and when the blow-pipe is understood and used correctly there is little danger of melting the matrix.

I prefer to cut the solder in large pieces, using fresh, creamed borax formed from the lump as a flux.

Before heating the investment preparatory to flowing the solder, flux the matrix and place a few small pieces of carefully fluxed solder well down in the bottom of the invested matrix. Add larger pieces of solder, filling the matrix and heaping it up so that when it flows it will nearly fill the inlay.

Heat the investment from the bottom, using a bunsen burner covered by a heavy wire net to support the piece. The investment should be nearly hot enough to flow the solder before the blow-pipe flame is applied. Always use a broad brush flame so as to evenly distribute the heat. If you control the flame to a needle point, and apply it directly to the solder you are very apt to melt the matrix and ruin the inlay. The idea is practically to cast the inlay.

After the first solder is flowed, add more until you have filled it sufficiently so as to give you your desired contour. When cool enough for the solder to harden thoroughly, plunge into cold water, as this facilitates the removal of the investment. Wash off the remaining parts of the investment and pickle in an acid bath.—*Items of Interest.*

TO SHARPEN OTTOLENGUI FACERS.

By running the facer backward in the engine hand piece and holding a crocus or fine emery disk against the blades it can be quickly brought to a keen edge.—*Tri-State Dental Quarterly.*

GOLD FILLING VS. GOLD INLAY.

Thos. P. Hinman, Atlanta, Ga.

In teeth, sensitive to thermal change, filled with cohesive gold, the sensitiveness is greatly increased by the filling, as the act of malleting causes a slight hyperaemia of the pulp; then, too, the gold coming in actual contact with the tubuli of the dentine the thermal shock is greatly increased. This does not hold in the gold inlay, as there is no hyperaemia from malleting; moreover, there is a lining of cement, which is a non-conductor, between the gold and dentine, so that there is little reaction to thermal change in teeth largely filled with gold inlays.—*Items of Interest.*

NEW MODE OF STERILIZING INSTRUMENTS.

A. W. Harlan, New York.

The sterilizing of instruments may be done in the following manner: Take a copper pan or kettle which is polished on the inside, and fill it with water from the hydrant. This must stay in the vessel for three and one-half hours, when it is ready for use. All germs by this time have been destroyed. If you like to boil the water you can do so, but it is not necessary. For each ounce of this water add one-half grain of sodium carbonate and place all your instruments in this. They should be scrubbed and cleaned in the sterilizing water, rinsed in another vessel, and dried with pieces of cotton cloth which have been heated to 400 degrees F. in a copper box. This is easy to do now, as electricity is so cheap, and is always ready for use. The French and other continental cooks use copper kettles and saucepans for their cooking, with a bright interior, as food always tastes better when so cooked. The small amount of colloidal copper dissolved in this manner acts as a complete sterilizer, and hence the good taste of the food. If you cannot get a suitable copper vessel, strips of polished copper may be suspended in the water to be sterilized, giving a larger surface for the water to act upon.—*Items of Interest.*

SWAGING CUSPS.

H. S. Vaughn, Kansas City.

In making the cusp for a collar and cusp crown I have found the following method quick and convenient: The band is fitted, an impression taken and the cusp carved in plaster in the usual manner. A fusible metal die is made from the cusp. Place the gold plate on the die and an ordinary cork on the plate and swage with light blows. This will partly conform the gold to the die. The die is then driven into the end of a soft pine stick, the gold placed in the impression and the swaging completed.—*Western Dental Journal.*

TO RESTRICT FLOW OF SOLDER.

F. W. Franklin, Kansas City.

In soldering gold, when it is desired to restrict the flow of solder to certain areas, with a sharp lead pencil draw a line around the desired area; the solder will not flow past the line. This is especially valuable in filling cusps of seamless crowns, to prevent the solder flowing up the sides of the crown.—*Western Dental Journal.*

TO REMOVE BAND FROM MODEL.

F. W. Franklin, Kansas City.

When making a full shell seam crown, after taking the impression and placing the band in its proper position in the same, place a thin layer of wax on the inside of the band. This will insure the band remaining in proper position while the model is poured, and will also make it easy to remove the band from the model and replace it at will.—*Western Dental Journal.*

WHEN TO USE PORCELAIN INLAYS.

Willis A. Coston.

It is safe to adopt the rule that in all cases where utility and durability is of first importance, do not attempt to use porcelain, but where the cosmetic effect is the principal consideration, do not fail to use porcelain.—*Kansas City Dental Journal.*

UNFAVORABLE OCCLUSION.

Hart J. Goslee, Chicago.

In those cases where the position of the opposing natural teeth, or the absence of some of them, necessarily throws the greater portion of the stress of mastication upon the dummies, and perhaps even precludes any occlusion of the abutments, a rest upon the tissue beneath the area of greatest stress is indicated. The relief thus afforded to the abutment roots, especially where the span is a long one, and the additional strength given to the piece at its weakest point will often admit of the practical and permanent application of a "fixed" bridge which would otherwise prove a failure.—*Items of Interest.*

MOLDING RING.

L. P. Haskell, Chicago.

The Bailey flask, so generally in use for molding, is totally inadequate for the purpose. In the first place, a model should be shaped so as to drop from the mold, never to be lifted out. This means flaring of the sides all around. In cases where deep undercuts are present in front, set the model so that the anterior portion is higher than the rear, and flare the model more on the rear. This being done, it is impossible to mold in the Bailey flask. A ring five inches in diameter and two and one-half inches deep meets all the requirements. Such a ring is sold by H. D. Justi & Son. For tapping use a small potato masher, paring off the knob on the handle for use at the sides.—*Dental Review.*

TO REPLACE TOOTH ON VULCANITE PLATE.

H. T. Harvey, Salina, Kan.

When a plain tooth is to be replaced on a rubber plate, cut out a dovetail in the rubber back of the place where the tooth is to go. Paint the back of the tooth and the space in the rubber cement. This is made by dissolving red rubber in chloroform. Place the tooth in position and pack the space with a piece of new rubber, using a warm spatula. Invest and vulcanize. Two or three plates could be invested in one flask, if necessary, as the flask does not have to be separated.—*Western Dental Journal.*

ANTISEPTIC LIQUID SOAP.

Dr. Wormer.

White soap, 1 kilogram; glycerin, 200 grams; water, 3 liters. Boil for three hours and cool for one day; then add water 3 liters, decant, cool, and then add alcohol of 90° 250 grams. Put aside for two or three days and filter. These proportions are for five liters of liquid soap. I have found the plan which I now recommend very economical, as only a few drops of the liquid soap and antiseptic solution are required to thoroughly cleanse and sterilize the hands.—*Dental Cosmos.*

TO CEMENT ARSENIC IN CAVITY WITHOUT PRESSURE

C. B. Warner, Avon, Ill.

Mix the cement rather thin and place a small drop on a small bit of paper and carry the paper to the cavity with the pliers. Press to place with a burnisher. The paper facilitates adjustment to place and prevents cement adhering to instrument.—*Tri-State Dental Quarterly.*

TO STOP PUNCTURE IN A RUBBER DAM.

A. C. Peterson, Elmwood, Ill.

For punctures of the dam or to stop leakage around the lower anterior teeth, dry the dam with cotton, melt a little baseplate wax on a spatula and carry to points of leakage. This result will gratify you.—*Tri-State Quarterly.*

STERILIZATION OF THE HANDS.

The best method for sterilization of the hands consists in washing them in a solution composed of the following ingredients: Commercial alcohol, 94 per cent. 640 cc., hydrochloric acid 60 cc., water 300 cc., corrosive sublimate 0.08 gram. This is known as the Harrington solution No. 9. After the usual scrubbing of the hands with soap and warm water, cutting of the finger-nails, etc., the application of this mixture to the hands will destroy bacteria in less than 30 seconds, as shown by a series of experiments conducted by Dr. Harrington. This mixture is non-irritating.—*Dental Cosmos.*

A SOLDER PILOT.

A. C. Wellman, Kankakee, Ill.

A common slate pencil is better for teasing solder than an instrument. The solder does not adhere to it and it does not heat up and burn the fingers. It can also be used for stirring fusible alloy. —*Dental Review.*

INSTRUMENT WIPERS.

A. C. Williams, Kankakee, Ill.

I have found small squares of bleached muslin very useful when removing deposits from the teeth. They can be held in the left hand and the instruments wiped on them instead of your dental napkins. This saves appearances; also the napkins. They are cut 2¾ or 3 inches square and may be used for a variety of other purposes which will readily suggest themselves.—*Dental Review.*

A HOLDER FOR VULCANITE RUBBER WHILE SOFTENING.

A. C. Wellman, Kankakee, Ill.

When packing a plate many lay a napkin over a dish of hot water, allowing the steam to soften the vulcanite rubber. The napkin often sags down into the water or slips off and causes considerable annoyance. By stretching a single thickness over a wooden embroidery hoop you have an ideal contrivance. The rubber will not fall off or stick to the napkin and you will be pleased with the result.—*Dental Review.*

DISH FOR ACID BOTTLES.

Set your laboratory acid bottles in a glass dish, or granite or other glazed tray, first covering the bottom with a thin layer of washing soda. The last-mentioned articles takes up the drip from the neck of the bottles, also to some degree the heavy fumes. If it is desired to have a dish to each bottle, the sponge dishes in use by bank cashiers and dentists, generally, when counting their money, answer the purpose perfectly.—*Dental Office and Laboratory.*

A GOOD POLISHING WHEEL.

A. C. Wellman, Kankakee, Ill.

In giving the final polish to rubber plates, I find that a polishing wheel made of about 25 thicknesses of unbleached muslin gives a better finish than chamois skin or a soft brush wheel. The edges of the circles of cloth become frayed and do not scratch. I can get a finer polish with this kind of polishing wheel than with anything else I know of.—*Dental Review.*

TO SECURE A WORN MANDREL.

A. C. Wellman, Kankakee, Ill.

If a mandrel becomes so rusted or worn that the screw no longer holds, a light blow with a hammer will flatten the hole slightly and cause the threads to hold as good as ever.—*Dental Review.*

LOCAL APPLICATION BEFORE INSERTING HYPODERMIC NEEDLE.

Frank Pollard.

Before inserting a hypodermic needle, apply a drop of chloroform to the skin; it is antiseptic and anaesthetic. —*Clin. Med.*

TO STOP PUNCTURE IN A RUBBER DAM.

Arthur C. Preston.

For punctures of the dam or to stop leakage around the lower anterior teeth, dry the dam with cotton, melt a little base plate wax on a spatula and carry to points of leakage. This result will gratify you.—*Dental Quarterly.*

TO SHARPEN A LATHE CONE.

If there is one thing more than another that is prone to cause profanity in the laboratory, it is the slipping and squeaking of brush wheels on a dull or threadless lathe cone, and the remedy is so simple that the only wonder is why one did not think of it before. Run the lathe toward you and hold an ordinary file or fine vulcanite file firmly upon the thread and let it travel up the cone and repeat. One minute's work will make it as good as new.—*Dental Office and Laboratory.*

SOCIETY

COMMENCEMENTS.

Indiana Dental College, May 7th; graduates	22
North Pacific Dental College, June 1st; graduates	33
Chicago College of Dental Surgery, May 29th; graduates	78
Omaha Dental College, May 31st; graduates	15
New Orleans College of Dentistry, June 1st; graduates	24
State Dental College, Dallas, Tex., May 4th; graduates	5
Lincoln Dental College, May 12th; graduates	7

INTERSTATE DENTAL FRATERNITY.

The annual meeting of the Interstate Dental Fraternity will be held at the New Kimball House, Atlanta, Georgia, on Monday, September 17, 1906. The meeting and banquet will be in charge of Dr. Thos. P. Hinman, the Vice President for Georgia.

Dr. Hinman's well established reputation as a host is a sufficient guarantee for a royal good time for all of the Frat. who can arrange to be there. Do not miss it.

R. M. Sanger *Nat'l Secretary.*

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. D., beginning July 31st, at 1:30 p. m., and continuing through the days of August 1st and 2nd. All persons wishing to take the examination must send in the examination fee of $10 before July 24th. Candidates must bring operating instruments, including dental engine, and such other appliances and materials as are necessary to do crown and bridge-work.

G. W. Collins, *Secretary,*
Vermillion, S. D.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The annual meeting of the National Association of Dental Faculties will be held at Atlanta, Ga., commencing at 2 p, m. on Friday, September 14, 1906. The Executive Committee will meet at 10 a. m. on the same day.

H. B. Tileston, *Chairman Ex. Com.*
R. M. Sanger, *Sec'y Ex. Com.*
East Orange, N. J.

MICHIGAN STATE DENTAL ASSOCIATION.

The semi-centennial meeting of the Michigan State Dental Association will be held in Detroit, July 9, 10, 11, 1906. A most cordial invitation is extended to all reputable practitioners to attend this fiftieth anniversary of the association, and a most interesting program is in preparation to celebrate this important occasion.

Edward B. Spalding, *Secretary.*

MONTANA STATE BOARD OF DENTAL EXAMINERS.

The next annual examination of the Montana State Board of Dental Examiners will be held in the city of Helena on July 16, 17 and 18, 1906. For further particulars communicate with

Dr. B. J. Keenan,
Secretary of State Board,
Butte, Montana.

AFTERMATH

Change of Location. — Dr. H. A. Pullen, orthodontist, is now located at 724 Main St., Buffalo, N. Y.

One-half Pass Washington Board. — Fifteen were successful out of thirty candidates who took the Washington State Board Examination in May .

Society sends $700 to Frisco Dentists. — At the session of the Dental Society of the State of New York in May, $700 was raised for the relief of the San Francisco sufferers.

Locates in Berlin, Germany. — Dr. William G. Law, announces his location at In den Zelten, 18 a Berlin, Ger., for the exclusive practice of orthodontia.

Fire, caused by the explosion of a gasoline lamp caused considerable damage in the dental office of Dr. Alexander Coyle. Oconomowoc, Wis. Dr. Coyle carried $800 insurance.

Damage by Fire. — A vulcanizer in Dr. Estock's dental laboratory, Monticello, Illinois, exploded, blowing burning gasoline about the room and damaging tools and material to the amount of $75.

Dies While Having Tooth Extracted. — Grace Metcalf, the fourteen-year-old daughter of Orson Metcalf, of Underhill, Vt., took chloroform to have a tooth extracted and never recovered from the influence of the anesthetic.

Presentation of a Loving Cup. — The dentists of Florida at their state convention presented Dr. J. S. W. Gallagher of Winona, Minn., with a handsome loving cup in order to show their appreciation of a clinic given by him at the convention.

New York State Dental Society. — Officers elected are: President, Dr. W. A. White Phelps; vice president, Dr. W. S. Rose, Shenectady; secretary, Dr. C. S. Butler, Buffalo; treasurer, Dr. C. W. Stainton, Buffalo; corresponding secretary, Dr. S. L. Goldsmith, New York.

The St. Louis Society of Dental Science has elected the following officers for the ensuing year: Adam Flickinger, president; Emma Eames Chase, vice president; Geo. H. Westhoff, secretary-treasurer;

Richard Summa, curator; E. P. Dameron, D. O. M. LeCron and F. S. McKay, board of censors.

Nebraska State Dental Society. — Officers elected for 1906 are: N. H. Morrison of Red Cloud, president; Horace Warren of Missouri Valley, Ia., vice president; M. E. Vance of Lincoln, secretary; H. T. King of Fremont, treasurer. Lincoln was chosen as the place of the next annual convention.

Oklahoma Dental Society. — After selecting Oklahoma City as the place for the next meeting, the Oklahoma Dental Association elected A. T. Dougherty of Oklahoma City, president; A. T. Cramer of El Reno, vice president, and C. L. White, Oklahoma City, secretary and treasurer for the ensuing year.

Appointed Members of State Examining Boards. — Dr. G. C. Marlow, Lancaster, Wis., appointed member of State Dental Board to succeed himself.

Dr. A. M. Potter, Providence, R. I., appointed a member of State Dental Board by Governor Utter.

Robberies. — Thieves effected an entrance to the dental office of Dr. C. L. Eller, Hedrick, Iowa, and carried away gold to the amount of $125.

The office of Dr. Claud Backus, a dentist of Dixon, Ill., was broken into Thursday evening, May 30, and gold plate and money to the value of between $100 and $125 was taken.

Southern Wisconsin Dental Association in May elected: — President, C. F. Rodolf of Muscoda; first vice president, B. C. Campbell of Lake Geneva; second vice president, E. H. Weber of Lake Mills; secretary, C. W. Collver of Clinton; treasurer, W. G. Hales of Mineral Point. Lancaster, where the association was organized twelve years ago, was selected as the next meeting place.

Northern Ohio Dental Association. — At the meeting in June, the following officers were elected: President, Dr. J. R. Owens, Cleveland; vice president, Dr. D. A. Allen, Toledo; recording secretary, Dr. J. K. Douglas, Sandusky; corresponding secretary, Dr. D. H. Ziegler, Cleveland; treasurer, Dr. W. A. Siddall, Cleveland. The next meeting will be the fiftieth anniversary of this society.

New Hampshire State Dental Society. — Officers elected are: Dr. Byron F. Staples of Portsmouth, N. H., president; vice president, Dr. John A. Worthen, Concord; secretary, Dr. F. F. Fisher, Manchester; treasurer, Dr. W. A. Young, Concord. Librarian, Ellis G. Harvey, Concord; Executive Committee, Z. P. Shaw, Claremont; H. P. Baldwin, Manchester; W. W. Moore, Newport.

College of Dentistry at Iowa City will be Enlarged this Summer. — An addition to the building used for the college of dentistry, costing $6,000, will be made during the present summer if the board of regents of the state university approve of the plans which will be submitted to them next month. The addition will double the size of the operating clinic, giving them seventy more chairs.

Tennessee State Dental Society. — The state dental association decided to meet next year in Knoxville and elected the following officers: Dr. A. A. McClanahan, Spring Hill, president; Dr. C. A. Sevier, Jackson, first vice president; Dr. John R. Beach, Clarksville, second vice president; Dr. Stanley R. Rich, Nashville, treasurer; Dr. Chas. A. Tavel, Memphis, recording secretary; and Dr. R. J. McGavock, Columbia, corresponding secretary.

Slurring Newspaper Notices Condemned. — Before adjourning, May 16th, the Lebanon (Pa.) Valley Dental Association condemned newspapers and people who call dentists "tooth-pullers" and "tooth carpenters." The subject was brought to a head by the introduction of the following resolution by Dr. C. V. Kratzer, of Reading:

Resolved, That this society disapprove of facetious headlines of newspaper reports and announcements of our meetings.

Recreation Day. — The dentists of Bay City have signed an agreement to close their offices from 12 to 6 p. m. Saturday, from May 19 to October 27, inclusive.

The dentists of Fon du Lac, Wis., have agred to close their offices on Saturday afternoon during the summer months.

The dentists of Mansfield, Ohio, will close their offices on Saturday afternoons and Sundays from May 18 to September 15.

Dentist Fined for Retaining a Set of Teeth. — Peter J. Searing was awarded $106 by a jury in Judge Williams' court, in his suit against Dr. J. C. Schneider, a dentist of Milwaukee Wis. Mr. Searing's complaint recited that he had bought a set of false teeth from Dr. Schneider, paying $89. Dr. Schneider claimed that $24 additional was due him and when Mr. Searing returned the teeth for repairs Dr. Schneider is said to have refused to return them until the $24 was paid. Mr. Searing sued for the recovery of the teeth and for damages incident to his condition while Dr. Schneider retained the teeth.

Vermont State Dental Society. — At the 30th annual meeting of the Vermont State Dental Society held at Brattleboro, May 16-18th, 1906, the following officers were elected for the ensuing year: president, Dr. George D. Mitchell, St. Albans; first vice president, Dr. C. H. Kent, Barre; second vice president, Dr. Harry F. Hamilton, Newport; recording secretary, Dr. Thomas Mound, Rutland; corresponding secretary, Dr. Grace L. Bosworth, Rutland; treasurer, Dr. W. H. Munsell, Wells River; executive committee, Dr. Charles F. Meacham Bellows Falls, Dr. A. Z. Cutler, Bennington, Dr. P. M. Williams, Rutland. The next meeting will be held the third Wednesday in May, 1907, the place to be decided upon later.

Deaths. — Dr. J. D. Burdick, formerly a dentist of Cheboygan, Mich., died May 8, at his home, 197 Pine St., Detroit, aged 50 years, of paralysis.

Dr. C. R. Gay of Seattle, Wash., dropped dead May 12, at the home of his sister. He was 59 years old.

Dr. Azariah Lanning, dentist, a resident of Salem, Ind., died of tuberculosis, May 16, 1906. He was 69 years old.

Dr. John A. Chapple, a dentist of Atlanta, dropped dead from apoplexy, May 18, 1906.

Dr. Moses N. Howland, a dentist of Lisbon, N. H., died at Brightlook Hospital, St. Johnsbury, May 16. He was seventy-two years old.

Marriages. — Dr. R. B. Howell, Ann Arbor, Mich., was married to Miss Martha C. Clark, Thursday, June 28th, 1906.

Dr. Paul DeGroff of Byron, Ill., and Miss Lila Brown of Stillman Valley, were married May 23.

Dr. Donald Ross, a dentist of Los Angeles, was married May 19, to Miss Lina Bradley of that place.

Miss Jessie Davis and Dr. G. N. Wyman were married at Lexington, Ill., May 10, 1906.

Dr. Clark M. Cryor of Dixon, Ill., and Miss Blanche Crawford of Franklin Grove were united in marriage in May.

Dr. E. S. Harrison, Wilwaukee, Wis., was married to Miss Helen O. Small, May 30th.

First Annual Report Rochester, N. Y., Free Dental Dispensary. — On Washington's Birthday, February 22d, 1905, the Rochester Dental Society, under the auspices of the Rochester Public Health Association, opened a Free Dental Dispensary at 32 South Washington Street, for the care of the teeth of the worthy poor.

Equipment and materials valued at $1,200 was installed; one-half of this amount was donated in cash by a member of the Rochester Public Health Association and one-half by members of the Dental Society, City Merchants and Dental Manufacturers and Dealers throughout the world.

During the first year, twenty-four members of the Society alternated in attendance at the Dispensary.

January 15th, 1906, an Operating Staff of three dentists were appointed one of whom is in attendance from 2 to 5 p. m. each week day.

Report of operations to March 1st, 1906, is as follows:

Patients Treated, 203; Separate Visits Made, 478; Operations Performed, 1,078.

F. W. Proseus, *Chairman.*
Wm. W. Belcher,
B. S. Hert,
W. W. Smith,
L. H. Gilbert,
Committee.

A Proposed Injustice to Many Members of the Army Dental Corps. — We are advised that the House Committee on Military Affairs has reported the Army Dental Bill (S 2355) with the following amendment to Sec. 2. *"And who were within the said age limit at the time their original contracts were signed."*

The adoption of the bill with this amendment would be a gross injustice to one-third of the present dental corps, which is thirty in number. Of this number ten were past the age limit when they entered the corps in 1901. This they did with the full understanding that upon the adoption of a law giving commissioned rank to dental surgeons they would benefit by its provisions and be continued in the service under the improved conditions. The reasonable certainty that such a law would sooner or later be adopted was their chief inducement for abandoning civil for army practice under all the disadvantages of the contract system.

Among those who are thus unjustly discriminated against by the proposed amendment are Drs. John Sayre Marshall and R. T. Oliver, two of the three who were selected by the Surgeon General upon the recommendation of the Executive Committee of the National Dental Association to organize the corps. Both of these gentlemen were past the age limit when they entered the corps; but they had full assurance that when the corps was commissioned they would be continued in position.

The dental profession should at once enter a vigorous protest against this most unjust measure. To allow faithful officers such as these after five years of service and in the height of their ability and usefulness to be dismissed from the Army with no provision for retired pay or pension would be a disgrace to Congress. — *Dental Brief.*

Recent Patents of Interest to Dentists. —

818661, Crown and bridge work, Arthur H. Brown, Hamilton, Mo.
819001, Package-roll of metallic leaf, Walter H. Coe, Providence, R. I.
818940, Saliva ejector, Henry S. Davis, San Francisco, Cal.
819641, Dental plate machine, Wm. S. Filley, Montpelier, Ohio.
819136, Tooth-spreader, John E. Herman, Sandusky, Ohio.
819137, Dental matrix-retainer, John E. Herman, Sandusky, Ohio.
819249, Dental filling, Frederick C. C. T. A. Osius, Muskegon, Mich.
819678, Dental waste cotton receptacle, Bert G. Simmons, New Brunskick, N. J.
820045, Dental vulcanizer, Valentine A. Gudex, Milwaukee, Wis.
820045, Electric dental furnace, Daniel G. Steinecke, New York.
820474, Mandrel for dental engines, Wm. C. K. Buchanan, Kansas City.
820781, Suspended electric dental motor, John F. Hammond, Brewster, New York.
820717, Gold-leaf book, Robert Henke, Jr., New York, N. Y.

Copies of above patents may be obtained for ten cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

CHRONIC ALVEOLAR ABSCESS WITH FISTULA.

BY FRANK G. WORTHLEY, D. D. S., KANSAS CITY, MISSOURI.

Professor of Dental Pathology, Western Dental College, Kansas City, Missouri.

The type of chronic abscess to be discussed in this brief paper is always a sequel to an acute abscess, starting in the tissues of the apical space, and caused by the passage through the apical foramen of septic material. It is necessarily preceded by death and infection of the tooth pulp. The pus formed during the acute stage having burrowed to the surface and discharged, the chronic condition becomes established. There is then presented for treatment the following pathological phenomena: An abscess cavity in the tissues about the apical end of the tooth, lined with cicatricial tissue; a fistulous tract, also lined with cicatricial tissue leading from the cavity to the surface; a minute opening at the surface termination of the fistula, generally, though not always, in the center of a pea-like projection on the mucous membrane. From this opening small quantities of pus are discharged more or less constantly. There are, of course, occasional cases where the pus may discharge into the antrum, on the face, through the floor of the nose and in other erratic localities, but it is proposed to discuss here only the ordinary type, discharging opposite, or nearly opposite, the affected tooth root.

Such a case may be of only a few weeks' standing, or the condition may have existed for several years. As there is usually no pain accompanying the lesion, and only a slight tenderness to percussion in the affected tooth, it escapes the attention of its victim.

If a carious cavity exists in the affected tooth the first step in the treatment is the thorough cleansing and disinfection of such cavity. Every particle of carious dentin should be removed and the cavity flooded with a good germicide. The rubber-dam adjusted, the pulp chamber and canal should be carefully cleaned mechanically. That is, with proper pulp canal cleansers all foreign matter possible should be removed. It is, of course, impossible to *clean* a canal with instruments, but it is excellent practice to remove all material possible in that manner.

The next step is to disinfect as thoroughly as possible the canal and dentinal tubuli. For this purpose there is nothing better than nascent oxygen: Work into the canal with a broach a small quantity of sodium dioxide; add to this a drop of a 10-per-cent. solution of hydrochloric acid; when effervescence ceases, wipe out with cotton and repeat the treatment. If this is kept up for 20 or 30 minutes there is reasonable certainty that the canal is clean. The sodium peroxide should only be used under the rubber-dam, as it is caustic.

For the next step in the treatment, take a quantity of peroxide of hydrogen in a hypodermic syringe, pass the needle up the canal as far as it will go without forcing, pack a little unvulcanized red rubber around the needle and force the peroxide through the tooth until it appears at the opening on the gum. This should be repeated until the peroxide runs through clear, without effervescence. Next take a wisp of cotton large enough to loosely fill the canal, dip it in pure carbolic acid, and place it in the canal. Over this place a piece of the unvulcanized rubber and with a large ball burnisher put pressure on the rubber until the carbolic acid is forced through the fistula. This will be shown by the gum turning white at the opening. Just a little practice will enable anyone to force medicaments through a tooth and fistula in this manner.

A drop of thin chloro-percha is now placed in the pulp chamber and with a smooth broach pumped into the canal. It is essential that the solution is not of a creamy or ropy consistency, but so thin as to flow readily. Place a pledget of the unvulcanized rubber over this and by pressure force the chloro-percha through the apical foramen, and if possible, out at the fistulous opening on the gum. The canal may then be filled with guttapercha points, and the case dismissed. Any case which can be cured at all by treatment through the root canal will be cured by this one treatment if carefully followed out. Coagulable lymph is poured out around the guttapercha in the broken-down area, and not becoming infected through the tooth, is promptly organized into repair tissue.

In from three to seven days it may be considered well. To give a case of this character a thorough treatment, and after the lapse of two or three days again force medicament through the tooth and tract, merely delays the cure by breaking down the newly-formed granulation tissue with which nature is trying to repair the injury. As long as the canal remains unfilled it is a possible source of reinfection unless extraordinary precautions are observed. A complication may exist which will prevent the healing of a case after this treatment is given. If resorption of the root end has taken place, if serumal deposits have been made on the denuded root, or if necrosed or carious bone be present the case will not heal. With either of these complications any treatment through the root canal must prove a failure. The irritant must be removed by operation from without. In any case the immediate filling of the canal removes the cause of the condition and eliminates the most dangerous channel for reinfection.

REGULAR CONTRIBUTIONS

PREPARATION OF CAVITIES FOR METALLIC FILLINGS.*

BY G. V. BLACK, M. D., D. D. S., CHICAGO, ILLINOIS.

It gives me great pleasure to meet with the State Dental Society of Ohio; the first time in my life, I believe, that I have met with this association. It seems to me that I have met with almost every other state association except this one, and I am particularly glad to be able to meet you at this time; and I thank you for the kind things spoken by your President.

In the preparation of cavities and in filling teeth there are two prominent objects to be accomplished:

First, to repair the physical damage inflicted by caries.

Second, to prevent the recurrence of caries in the particular surface of the tooth filled and to promote the health of the mouth generally.

If these propositions are tenable, filling teeth is not simply the repair of the physical damage to the teeth, but has a higher object, that of the treatment of disease. This, if carried out in detail, calls for the skill of the pathologist to diagnose conditions and the discrimination of the physician or surgeon to apply the remedy.

The *first* is the work of the skilled artisan, whose fingers and eyes are trained to delicacy of manipulation.

The *second* is the work of the professional man trained in pathology and the application of remedies.

The *first,* without the training of the second, may build beautiful repairs of teeth that will go to pieces because not planned to meet conditions that will come to them.

---

*Address before the Ohio State Dental Society, December 6, 1905.

The *second,* without the first, will be a mere blunderer in his endeavor to apply remedies.

Either without the other fails to exemplify the higher duties to the people implied in the word "dentist."

DENTISTRY DEVELOPING.

Dentistry is a developing profession, young, vigorous, resourceful, but not yet full grown. It has not yet arrived at that maturity of thought and action that characterizes a full adult condition, either in the sciences underlying and applying to its most useful development or from the artistic or the professional point of view. Yet its past is a history of great good accomplished, of great progress made. Its present is a forward movement all along the line. In this I do not speak without having taken observation and having made my reckonings. Careful inquiry among dealers shows that the trade in dental goods has more than doubled within ten years. Dental tradesmen on the road tell me they are finding new men in the smaller towns all over the country in places where dentists could not find employment a few years ago, that they are regularly buying goods and paying for them. This means that people who did not employ a dentist a few years ago are doing so now and paying for the service rendered. This again means that the service rendered is a better service than that rendered formerly and that the people are learning to appreciate that better service. Furthermore, just as we increase the actual utility to the people of the service rendered, will our people appreciate it more and the greater will be the number proportionally of our people who will make use of the dentist. This kind of development is going on faster at the present time than ever before in the history of dentistry. This is because we are doing better dentistry today, man for man, than ever before, and improvement will go faster as the years go by.

Yet I fancy some men will say that the old men did better filling years ago than is being done today with all our new fangled notions. I often hear these men speak of some very old filling that they have seen, thirty or forty years old, as proof that better fillings were made in the olden time.

Now that reminds me of a little story that was shot at me the other day in Chicago. I had given a lecture to a Chicago society the evening before and in a certain office two dentists were discussing it when a dentist from the country happened in. They told him about it and asked if he knew Black. "Well, yes, I have heard of him at any rate. The fact is, an old duffer came into my office a few days ago and asked me if I knew Black, and went on to tell me about a wonderful filling he made for him about forty years ago and asked me to look at it." "Well, was it a good filling?" "Oh, yes, I suppose it was, but I noticed that that was the only tooth the old chap had left in his jaws, and while he was telling me about it I couldn't help wondering, if Black was such a mighty man at saving teeth, what the hell had become of the rest of them."

Now, gentlemen, whenever you hear of these wonderful old fillings that have stood for so many years, just ask what has become of the rest of them, and mark my words those of you who will live to see it, there will be more forty year old fillings forty years from today than on any previous day in the world's history.

But to make these fillings better and still continue to make them better, we must study every detail of the subject of dental caries, of its modes of attack, the conditions of its attack, its surroundings and its forms, and apply ourselves closer and closer to the means of repairing its injuries and the prevention of its recurrence than ever before. Too many men are giving little attention to the study of caries from day to day during the progress of their work in filling teeth; too many men are striving by mechanical means only to make fillings that will be good forty years hence, and are failing because they are not adapting them wisely to the conditions.

Any proper study of the preparation of cavities for metallic fillings, my subject tonight, is a study of the beginnings of dental caries and the means to be employed to so adapt the forms of cavities and the forms of fillings to the conditions as to prevent the recurrence of decay. If I can do just a little to assist in this, I shall be satisfied.

If I could tell you to prepare cavities in incisors in a definite way, to prepare cavities in proximal surfaces of bicuspids in one definite way and so on for the various teeth and surfaces of teeth, as the mechanic would build a variety of pieces of furniture, the task would be a light one. Instead of that, my duty is to tell you, if I can, why a cavity should under certain conditions, be prepared in a definite way to meet those conditions, and how another similar cavity should be prepared in another definite way to meet other certain conditions. To do this you must gain an understanding of the conditions and arrive at a judgment as to the best preparation of the cavities that come to your hands. It will, then, rather be my effort to improve your judgment in the planning of your operations to meet conditions successfully by illustrating conditions as well as I can with present means at my command, together with the plans I have adopted to meet them, than to give specific instruction as to this or that form of cavity. To do this, I must have as much or more to say of dental caries than of the particular forms of cavities.

In my opinion, we have only just begun the rational study of dental caries. True, Dr. Miller has written some bright pages that will go down in history to illumine his name, no matter what discoveries the future may bring. But this is really but the bottom rung of the ladder that must yet be climbed before we can claim to fully understand dental caries.

In what I have to say tonight, I shall give little attention to caries of dentin. It is caries of enamel that interests us in filling teeth. Caries of dentin becomes a mere incident in the progress of destruction that does not occur until the enamel has been penetrated by decay. If we can prevent or cure caries of enamel, caries of dentin is not of consequence.

DENTAL CARIES.

The first series of slides will be of beginning dental caries, a photograph of the distal surface of a central incisor with a beginning decay, a whitened spot only. I will ask you first, for I want you to think about it, by what power has the action of the acid been confined to that one spot? When we answer this question and give such explanation of the localization of beginning decays of enamel as will stand adverse criticism and laboratory experiment, we will have done much to explain the beginnings of decay of the teeth. Until we can answer that question satisfactorily we are in doubt. Why has the action of the acid been confined to that spot, while all the rest of the tooth, bathed apparently in the same fluids, is not in any way decayed or injured?

Photograph of an upper molar split mesio-distally, showing a whitened spot of beginning decay of enamel in the deep central pit. I show you three of these illustrating the progress of decay in the enamel. Now in these pits is the beginning of the decays, and this white area is the beginning of the decay in this tooth; and here is another that illustrates that a little further from the standpoint from which I wish to speak. The area of whitening, marks the beginning of the decay of the enamel in these pits which are often so small that the shaft of a small pin would not go into them. Now we can understand how a colony of micro-organisms may grow in the depth of such a pit and be shut off from washings by the saliva so that we get an intensity of the process of fermentation and confinement of the acid formed by which a stronger acid is formed than is possible in the saliva. The saliva never becomes sufficiently acid to decay the teeth. If it did the teeth would decay all over. That expression was used by Discerebode, a French writer, in 1835. But he says also: "If I put a cap over a tooth, cover it in, the food will collect there and decompose and be the cause of caries to the tooth, and the tooth will decay then practically all over, otherwise the saliva never becomes sufficiently acid to cause decay of the teeth." But here, shut in, where we get the full intensity of fermentation without distribution of the acid in the saliva, we get an intensity of acidity that does decay the teeth rapidly. Dr. Miller has said he could not get sufficient acidity to produce caries artificially unless bread and sugar were added to his culture media. In ordinary culture bouillon as I understand him he would not obtain a sufficient degree of acidity to produce decay. Now in this little pit we have a culture shut off from interference by the saliva, and we get a sufficient degree of acidity to dissolve the enamel.

The next is similar only the decayed area of enamel is larger. In this third case the decay is just entering the dentin. And here is another thing to which I want to call your attention, because you will not see it again this evening. In all of these pit decays a part of the progress of decay has been across the enamel rods. In all other beginning decays of enamel decay follows the length of the enamel rods dissolving the cementing substance between them. Here the rods themselves are dissolved showing an intensity of the dissolving process that we get practically nowhere except in these pits.

The next photograph, also from a split molar tooth shows a broad decay of the dentin. In exhibiting this I want simply to call your attention to the fact that decay, as soon as it passes into the dentin, at once spreads along the dento-enamel junction in every direction, and undermines the enamel, and at the same time follows the dentinal tubules toward the pulp, forming a conical decay. But this photograph shows also a proximal decay of the enamel, only that broad (pointing out) and spread that far upon the surface; but it has gone through the enamel at a central point only. None of the enamel rods have fallen out. It has gone through the enamel how? By a dissolving the cement substance from between the rods. It has percolated that way clear through, removing the cement substance that holds these rods together. It dissolves much more readily than the rods themselves, showing a marked distinction between proximal beginning decays and those beginning in pits that in my sections have been almost constant. We find no micro-organisms in enamel until after the rods have begun to fall away.

The next is a photograph from a split incisor tooth. We see this mesial portion has gone all to pieces, decay has spread along the dento-enamel junction, and it has penetrated deeply toward the pulp. But it is the distal surface to which I want especially to call your attention. A decay beginning in the enamel has spread on the surface penetrating in conical form and has gone through the enamel at the central point. You see now in the split tooth the spot that I showed you at first, and it is the same spot, the decay has passed through the enamel at the central point. No enamel rods have fallen out, but the acid has dissolved the cementing substance between the enamel rods and they would soon begin to fall away and then micro-organisms will begin to enter the dentin. In this decay and the previous one the penetration is in the central point of the spot and thins away to the margins, suggesting that a colony of micro-organisms has begun to grow at the central point and have spread on the surface of the tooth. They do not always do this.

I will show you some forms of beginning decay illustrating the tendency to spread and the tendency not to spread on the surface of the enamel will be in evidence. Here is a photograph from another split tooth in which decay has been confined to a small spot on the surface but has passed directly through the enamel. It is as broad at the dento-enamel junction as upon the surface and has rigidly followed the length of the enamel rods. Now why does decay spread broadly on the surface of the enamel in the one case, and shoot directly through in a narrow section in another case? What power controls this beginning and spreading upon the surface in one case, and controls this apparently different action that sends an acid directly through the enamel to the dentin in another?

This next picture shows the spreading of decay in the dentin and the backward decay that occurs in the enamel. This has been a very small area of penetration, and the backward decay has destroyed all evidence that existed upon the surface of the tooth that decay had begun there. There is no whitened area around this cavity, but if we cut out the decay and make a filling and do not extend our cavity, we may have later the spread of a whitened area beyond the margin of our filling and the recurrence of decay, a new beginning upon the surface beyond the margin of the filling. That is — if we make a filling and leave the form of the tooth about the same as it was originally, a colony of micro-organisms will again become attached to the filling and will finally spread over its margins.

Another photograph of a similar case, and again I ask by what power is the acid confined to that area and that penetration directly through following the length of the enamel rods. This beginning of decay is on the most prominent portion of the rounding of the distal surface of the cuspid tooth. The contact point was just to the occlusal of the decay and that point decayed had the near approximation of the surface of the bicuspid. But why was it confined to so small an area? When we know all about the forces that control these things we will know a great deal more about the beginnings of caries of the enamel.

Here is another beginning decay on the distal surface of a lateral incisor. You see how it follows the length of the enamel rods through to the dentin in the same manner as the previous one. Here again, what has confined the action of an acid to that one spot. I prepare these carious spots for photographing in this way: I first photograph the spot upon the tooth, then I split the tooth through the spot, and I photograph the cut surfaces; then I grind from one or both portions a thin section for study with the higher powers of the microscope.

WHOLE TEETH.

In this photograph we have a study of the decayed area upon the surface of the tooth. Now I want you to notice this particular peculiarity because I will call your attention to it again directly — the length of the decayed area in bicuspids and molars is almost always across the tooth from buccal to lingual, while the shorter diameter is from occlusal to gingival. This has a most important bearing on the preparation of cavities for the reason that we must cut proximal cavities broad enough bucco-lingually to include the length of the decayed area. I will show you several of these.

The next is a much smaller area of beginning but has the same general form. It was spreading to the buccal and to the lingual. If we cut this away we have a very narrow cavity. But, will it spread more?

The next has a half-moon form, with the curvature toward the occlusal. Now these are the principal forms of the proximal decays in bicuspids and molars. Why should they take these forms?

The next is a split tooth and shows decay, not a cavity, but the injury to the enamel. The cement substance between these rods is dissolved out, and here you see the outlines of the injury. It is on the surface that it spreads. It does not spread latterly through the enamel as we see it spread in those decays in the pits. It follows the enamel rods rigidly. You see this here (pointing out), and this little break here, and then it is deeper there and this has progressed clear through the enamel at this point and here we have a little beginning showing that the condition producing decay has gradually spread upon the surface all the way from that point to that point (pointing out). It is just now beginning to penetrate through the enamel in the central part of the area.

The next. Now here is a cavity where the enamel rods are dissolved out and fallen away exposing the dentin. You see how that has followed the enamel rods on the side toward the occlusal. See how this has followed mostly the enamel rods with very little spreading from this particular cavity toward the gingival. Here is one point of almost separate beginning on the surface in which there are no enamel rods fallen away as yet, though the enamel is deeply decayed.

Now here is one more split tooth, a bicuspid with a beginning decay on the mesial surface and another on the distal surface. In both the enamel has been penetrated and just a little softening of the dentin has occurred. After the split tooth was photographed it was placed upon the grinding disk and a thin section made for microscopic examination. From this again photo-micrographs were made of each of the areas of decay for a closer study of the conditions. These we can compare with the photograph of the split tooth in which we have the full form of the crown and readily locate the extent of the injury, as we cannot ordinarily do with photo-micrographs because they show so little of the tooth crown. Now locate in your mind the extent and locality of the decay in the mesial surface, which is to the left, and we will next see the photo-micrograph of that on the screen. Now that is right, we will change these back and forth again so that all may fix the position. Now study the photo-micrograph. Notice that there is just a little spreading of decay along the dento-enamel junction and some softening of dentin. At one point a considerable bunch of enamel rods have fallen out through a part only of the thickness of the enamel, and the rest seem to have been disturbed. They seem to be jumbled together or bunched as though they had been loose. Toward the occlusal there is spreading of the beginning of decay on the surface. At the highest point of spreading toward the occlusal there is a portion almost independent of the other portions of the area which has penetrated deeper than that lying next. This follows the enamel rods, its deeper portion being in the form of a conical point. All of this shows plainly that the spreading is upon the surface of the enamel and not within the enamel, except in the direction along the length of the enamel rods toward the dento-enamel junction.

Now we will study the area of decay on the distal in the same way, first fixing clearly the location and extent of the area of decay by comparing with the photograph of the split tooth. In this none of the enamel rods have broken away or fallen out, but the dentin is softened, part has shrunk a little in drying, giving the appearance of a slight cavity along the dento-enamel junction. Toward the occlusal the penetration follows directly the length of the enamel rods through the whole thickness of the enamel with only the slightest spreading on the surface. But toward the gingival the new beginnings of decay spreading along the surface of the enamel is even broader than what seems to have been the first area of attack.*

I want to call your attention to this photo-micrograph and the one following particularly. This is a very fine specimen of caries of the enamel and with my machine for that purpose I ground it to one-thousandth of an inch in thickness for photographing with the higher powers of the microscope. I found, however, that my mount was not a favorable one and in dissolving it out to change it, I lost all of this part which you see is broken away. But what I have is good. This picture is made with the same lens as the others I have shown. It was difficult to photograph because it is so thin it will not cast a shadow except under the most favorable conditions. You will notice that the penetration of the enamel has been very irregular. In the spreading on the surface some points of decay have extended into the tissue more deeply than others, giving these little points of deeper penetration. I want to show you in this next picture just some little parts of this deeper portion more highly magnified so that you may see the individual enamel rods, and see also that even in this deeper part the cement substance has been removed from between them. This was so of course in the grinding, but they were held together and in normal position by saturating the part with balsam and hardening it with grinding and mounting while in this condition.

---

* Following these nine photo-micrographs of areas of beginning decay of the enamel, were shown varying in extent and in their particular characteristics, but all showing a similar disposition to spread upon the surface of the enamel, begin its penetration and then follow the enamel rods to, or toward, the dento-enamel junction. The eighth and ninth of these should have further notice.

Now, gentlemen, I bring this particular picture to your notice to impress upon you the one fact that we have micro-organisms acting upon the enamel without entering the enamel. No micro-organisms have been found in enamel until the enamel rods have fallen out or have been dissolved away. We have micro-organisms acting upon the enamel by attaching themselves to it and remaining in that position in the form of zooglia, or agglutinated together with gelatinous material that prevents the washing away of acids they form. In this condition they are able to produce an intensity of acidity sufficient to act upon the enamel, producing the beginnings of caries as I have illustrated. Now this can occur in proximal surfaces only where there is near contact of one surface to another that prevents the micro-organisms from being pulled away by excursions of food or other cleaning processes. This is one of the principal factors of the localization of decay. But if the conditions are so changed by the loss of contact that nearness of contact is increased or a larger area of tooth surface is brought into nearness of contact, micro-organisms will spread over that larger area and carry with them decay of the enamel. Or, if we in filling our cavities, do not separate the teeth sufficiently, and make our fillings, finish them ever so nicely and then let the teeth drop together so that the surface will come in a little nearer contact, decay will then spread over those surfaces making near approach to each other, and the beautiful filling that we have built so artistically, so mechanically perfect, will fail. Notice particularly that this has no reference to extension of decay in the dentin. It refers exclusively to the extension of the beginnings of decay in the surface of the enamel.

The next picture. Now here is a molar tooth. Now you remember I pointed out that in the bicuspids and molars we find the extension of decay is from buccal to lingual. Now here is the white spot with the extension from buccal to lingual the same as in the bicuspids, and we have to guard particularly in those directions as well as towards the gingival in the preparation of our cavities. We must study these, one by one, from mouth to mouth, and get at these things.

The next picture. Here is another, not so broad. Here is a whitened area that betokens mischief. I remember very definitely that upon that tooth it showed quite prominently, but it is not so prominent in the photograph. But if we allow contact, or allow them to drop together a little closer some months or years after the finishing of our filling, we notice decay beginning out here to the buccal or lingual or both, where the surfaces have come in closer contact.

The next two pictures are photographs of the bicuspids and first and second molars of one side of the upper jaw divested of the gums, but otherwise in normal relative position to each other. The one is an occlusal view; the other is a buccal view of the same teeth. On examination of the contacts formed between these several teeth we find much difference between them in several respects. Between the first and second bicuspids the contact from buccal to lingual is very much narrower than the contacts between the second bicuspids and the molar, or between the molars, and the embrasures or openings in between the teeth to the buccal and to the lingual are correspondingly deeper and broader. In these it is easy to see that the portions of tooth surface that will be worn and cleaned by the crushing of food through the embrasures to the buccal and to the lingual of the contact points will vary considerably, being very much greater proportionally between the two bicuspids than between the other teeth. Now when we turn to the photograph taken of the buccal surfaces, the gums between the teeth being removed, we see that the bell forms of the crowns and the sharp rounding of the proximal surfaces of the teeth near the occlusal, holds the teeth well apart except at a very narrow contact point. In this view the width of the point of contact is much more equal between the several teeth of the group. The lesson that I wish to impress upon you in this is the strongly apparent fact that in the cases of the narrow contact from buccal to lingual as seen in the picture made of the occlusal surfaces, any decay occurring in the proximal surfaces will almost certainly be confined to that particular portion sheltered from the excursions of food forced through the embrasures to the buccal and lingual of the contact in chewing. Therefore a decayed area starting between the two bicuspids in this particular case would spread less bucco-lingually or be shorter in that diameter than a similar area of decay starting between the two molars. Also in preparing a cavity for filling in each of these two cases, the extension to the buccal and to the lingual would be different as to the necessary breadth required to find well cleaned surfaces upon which to lay the margins of the cavity. The rule in all cavities in the proximal surfaces should be to cut so far to the buccal and to the lingual as may be required to lay the cavity margins on the lines from occlusal to gingival that are best cleaned by the excursions of food through the embrasures in chewing. This study of the mechanical conditions giving opportunity for the spreading of decay, particularly from buccal to lingual, should be carefully made in every case coming into our hands for treatment.

We see also in this the reasons for the general fact that decays beginning in the enamel are long shaped from buccal to lingual, and narrow from occlusal to gingival in their first beginning. Normally this inter-proximal space seen in this picture of the teeth divested of gum tissue is filled with the gum septum, and the first beginning of decay is confined to the slight area occluso-gingivally which is exposed to accumulations of microorganisms by the gum septum being driven a little away to give room for accumulations to the gingival of the contact. Just as the gum septum is driven more toward the gingival, so will be the tendency of the decay to spread more in this direction. Therefore in all cavity preparations in proximal surfaces, the gingival margin should be laid so far toward the gingival line as to insure that after finishing it will be covered by a healthy gum septum. This expresses in brief the general principles of the extension of cavities for the prevention of the recurrence of decay considered from the mechanical standpoint. But there is another view that must be carefully considered. All of our studies show that in the larger proportion of the cases, the tendency is for decay to begin in the central portion of these sheltered areas and to gradually spread to every part of the surface to which micro-organisms can be allowed to attach themselves. Therefore if we cut only to the margins of present signs of beginning decay at the time of operating, we will too often find the margins of our filling overrun and decay rebeginning at the margins to the buccal and to the lingual. It must be understood distinctly that the filling does not reduce the liability to caries beyond its margins, and that if micro-organisms have attached themselves to the tooth in this locality before the filling was made, they will again attach themselves to the filling after it is made with the tendency to overspread its margins by lateral growth.

It is just here that the greatest significance of intensity of the predisposition to caries or to the coming of immunity from caries, manifests itself. In the latter case it is easy, apparently, to make fillings that will stand. But in cases of young people and particularly in children in whom the tendency to caries is increasing rather than diminishing, cavities must be cut especially wide to be successful in preventing the recurrence of decay.

It is in these also that the vigorous use of the teeth in chewing food has its greatest effect. If by reason of the interference of sensitive teeth that become painful in chewing food, the patient has formed the habit of avoiding vigorous mastication, they must be put into training until they are able to again use their teeth with vigor. It is often best in very bad cases to do this in the first instance by the use of temporary fillings that will for the time enable the patient to chew food without pain. I have found patients whose peridental membranes were so tender from non-use that they who were unable to bite on the dynamometer with a force of more than thirty or forty pounds, gave a register of a hundred and fifty pounds within a few months. While it would have been impracticable to make good solid gold fillings at first because of this sensitiveness of the membranes, the training in the normal use of the teeth will soon bring about a betterment that permits the use of any amount of force that may be desired with the minimum amount of pain. In some cases I should refuse to treat these very bad cases if I could not so control them as to remove this sensitiveness before making permanent operations.

PREPARATION OF CAVITIES.

I will now direct your attention more particularly to the preparation of cavities using for illustration lantern slides from

India Ink drawings I have myself made. These have generally been made in series which illustrate operations step after step, but for our present purposes I have brought only some selections.

The picture on the screen represents the distal surface of a central incisor with a considerable whitened area to the gingival of the contact point — a beginning decay. No enamel rods have fallen out, but the softening discovered by the explorer shows that the enamel is practically penetrated. After studying the conditions I find the surfaces are in rather close proximity to the lateral incisor, well out into the shallow embrasures both to the buccal and lingual. The question of the form and extent of the prepared cavity must be considered. In this case it must be expected, in view of the beginning decays I have shown this evening, that there is but little softening of the dentin and there will be no necessity for cutting a deep cavity or in any way endangering the pulp of the tooth. But we find many decays beginning in this person's mouth and they are running a rapid course. Therefore the breadth of the cavity must be such as to give good protection against recurrence of decay for a number of years before we can expect such systemic changes as will bring immunity.

In this next picture I have illustrated the superficial form of the cavity. The minimum of extension that I would use in such a case. Note particularly that I have discarded entirely that form of cavity rounded toward the gingival formerly so much used, and cut the gingival wall flat and horizontal from labial to lingual, making the broadest point in the cavity at the extreme gingival portion. The angles formed with the labial and lingual walls are sharp and acute in the dentin and slightly rounded in the enamel. I have cut into the dentin only deep enough to secure the filling — no considerable depth is required.

Now to further explain this preparation we will take a small square from the labio-gingival angle of this and show it enlarged in another picture. Here we have a portion of the gingival wall, (pointing out), the labial wall, and the axial wall, represented, with the line angles by which they are joined, and the point angle will be just in here where these meet (pointing out). Now take an inverted cone bur eight-tenths to one millimeter in diameter, and press it into the angle, draw it toward the incisal, then press it into the angle again and draw it to the incisal until you have cut to a depth of a little over half the thickness of the bur-head. One millimeter is one twenty-fifth of an inch, which is large enough in almost any case. I call that a convenience point, such an anchorage makes it easy to secure the first pieces of gold in these angles and renders the filling safe from movement during the building.

The next illustration is the same except that after cutting the convenience point as shown in the former picture, in this the bur is placed close in the angle and sunk half the length of the bur-head — never deeper. This gives a little greater security to the first piece of gold, when that is thought necessary, without seriously endangering the checking of the enamel in filling it. Whatever else I do, I never drill a·hole in the gingival wall of a cavity. I have seen hundreds of fillings that were ruined by that. If you drill a hole for anchorage anywhere along the gingival wall and drive gold into it, later you are apt to find that you have checked the enamel at a point where you could not see it, where you could not remedy it, and it will come back to you ruined by having drilled that hole into it. I never do it.

The next. Now this form of convenience point we may cut with a chisel if we choose, those of us who have sufficient finger power, but the man who cannot put down twenty pounds with the pen grasp had better use the bur. If he can use twenty to thirty pounds pressure, he can cut that form quickly and easily with the chisel and do it easier for the patient than with the bur.

Now here in this next picture is a typical molar cavity in which both the convenience points, the buccal and lingual are shown. In the proximal cavities in molars and bicuspids these are purely convenience points to assist the starting of the filling. They are not needed for anchorage, for that is done in the step portion of the cavity. I do not try to show them in my pictures generally, for to make such small points particularly clear is difficult, and takes a great deal more time in making the drawings, so I show you only the general outlines of the cavities. Understand, however, that in all these cavities the convenience points are made in the same way. Now we go back to our incisor tooth illustrating the first beginnings of the filling in these convenience points. In the first the convenience points only are filled; in the next picture the gold is built across from the one point to the other and with that form of cavity you feel perfectly safe, for it is never going to turn, twist or shake. It is a cavity that you can fill with certainty.

The next shows the completed filling with the contact point sufficiently prominent to hold the lines of the enamel margins away from near approach to the approximating tooth, to be sure that the excursions of the food will keep the margins of the filling clean. The gum covers the gingival margin and so long as that is so it is safe, provided you have made your filling water-tight. The arrangement of cavity walls for this purpose of keeping the margins of fillings clean by the excursions of food in the normal use of the teeth, is the secret of success in the filling of proximal cavities. A few months ago I went back to Jacksonville, my old home, to visit my son who is a surgeon. He and I were in his carriage together and we stopped at his office to allow him to run in for some instruments he wanted. I stepped out on the sidewalk and was walking back and forth waiting for him, when a lady came along leading a little girl five or six years old. She stepped up to me and said: "Doctor, have you forgotten me?" and as she spoke she raised her lip with her finger showing her teeth, and said "they are all there." I began with that girl when she was eight years old, making fillings in proximal surfaces of her teeth, and it was her brag as she grew up that she had never lost a filling; she had never lost the pulp of a tooth; she had never lost a tooth; all of which was true. Normally, or by inheritance, she was very susceptible to caries and required many fillings. Events like this, gentlemen, constitute the greatest happiness to a dental practice.

Now in this picture I present a cross section showing the anchorage effect of those convenience points that I have shown you. And in this next, the incisal anchorage is shown. Such a filling is secure if you have made it broad enough to protect the enamel margins. And finally for this case, here is the appearance from the labial.

The next. Now as you look at that you know what is the matter. I need not tell you. (Showing a filling in an incisor with a leak around the labio-incisal angle.) That fellow didn't get his gold in place. There is a leak. It is not because decay has spread beyond the margin. The trouble was with the dentist in the placing of his gold. There have been many such cases and there will be more with the best of us, try as we will to make perfect fillings, we will sometimes fail.

But the next is different. In this case the gold was well enough placed, but the cavity was not properly planned. Caries has outflanked the operator. There has been recurrence of decay by extension beyond the cavity margin, not because of leakage. Now you have all seen both of these, plenty of them. Only two days ago a dentist spoke to me in passing on the street. He said: "Doctor, I had a very sad case in my office yesterday. A lady has come to me with nearly all the proximal surfaces of her teeth filled, and they have been beautifully done, but in almost every one I find spots of decay beginning, mostly at the bucco-gingival angle, a few at the lingual-gingival angle. There is no help for it. I will have to remove all those fillings. The laying of the enamel margins had not been properly planned, the recurrence of the destruction is the result." Now if this portion showing the whitening of the enamel in this picture, had been included within the cavity outline, we would not have had that condition. It is only a little cutting if you get at it right to do it. It is not cutting that makes your cavity apparently much larger. It is cutting that makes your cavity easier to fill, and when you get accustomed to it, it takes less time than to prepare and fill a cavity with the gingival portion rounded. I admire the skill of a man who can make a perfect filling in a cavity rounded at the gingival. It is a difficult thing to do. It can be done; but the same man can make the filling very much quicker and much safer if it is cut to acute angles with the buccal and lingual walls at the gingival. Now in either of these cases I have pictured, after decay had gone a little further you could not tell whether it was a leak or whether it was the fault of the laying of the enamel margins that had caused the trouble. The evidence would be destroyed by extension of decay.

The next three pictures show a cavity cut wide because of the extent of decay and the weakening of the enamel walls. No one should cut so broad a cavity under the plea of extension for prevention. There is no necessity for such broad cutting except in these neglected cases where decay has burrowed extensively. Although the filling shows badly, it is perfectly good. A porcelain inlay in such a case would make a better appearance, but would not be as safe.*

The next picture shows a bicuspid with a small, almost round opening through the enamel through which caries has burrowed deeply into the dentin. And in this next picture a preparation of the cavity is shown with the gingival walls rounded and the anchorage made by grooving the buccal and lingual walls. This was done in the olden time, but has passed forever. Nowadays we always square out the lingo- and bucco-gingival angles, making the gingival wall flat from buccal to lingual, and cut a step for a more secure anchorage, cutting wide from buccal to lingual or not as the case may demand. In either case the general form is such as you see in this next picture. This particular cavity is unusually narrow from buccal to lingual.

---

* Several other series of pictures showing the detail of preparation of cavities in incisors were shown and commented upon.

This next picture giving the appearance of the finished filling from the occlusal, with the contact with the next tooth gives the reason for cutting a narrow cavity, and also explains the small opening made by decay through the enamel. In this case the contact is unusually narrow and the embrasures wide open to both buccal and lingual. There is no call for wide cutting.

In this next case I will show you the other extreme. The cavity is broad when the overhanging enamel is cut away and the contact has been very broad and flat. The broad, flat surfaces of the bicuspid and molar come in very near apposition. It would appear that extraordinarily broad cutting would be required to place the enamel margins on self-cleaning lines, but we are not at the end of our resources. It is not necessary to cut the cavity unusually broad.

In this next picture I will show you that we may readily separate these teeth and build a prominent contact point to hold them apart that answers the same purpose that would be answered by cutting an unusually broad cavity. This also puts the whole case in better form. This is an occlusal view of the finished case, showing the contact with its fellow. Notice now that we have placed the enamel margins both to the buccal and to the lingual in such position that they will be kept well cleaned. We accomplish the purpose that we set out to accomplish by separating the teeth and building out a pointed contact, better than by cutting broadly. By building the pointed contact we at the same time have protected the proximal surface of the adjoining tooth. One of the things that I have done much of, and which my patients seem to appreciate perhaps more than any one thing is this: When contacts have worn and become so flattened as to hold food crowded between them which begins to form a pocket in the gum into which patients are continually crowding more food, which causes pain, one of two things will occur if that is not remedied: either a decay will begin close to the gingival line of one tooth, or both teeth, or else a disease of the gum will be inaugurated by which the teeth will be lost.

There are no cavities in the teeth, only the contact points are worn flat by rubbing on each other. I cut a cavity in one; separate the teeth; build out a prominent contact, and put them into position again so that the patient can eat without pain, and they will thank you and pay your bill. I have saved many teeth from destruction by cutting a cavity where there was no decay, and building out a prominent contact.*

Passing now to the consideration of decays of the buccal and labial surfaces, I will show you first a cuspid tooth with a buccal decay that has begun practically in childhood and exhibits an unusual intensity of the carious process. You who have watched these things closely know that buccal decays occur usually a little later in life than those of other surfaces of the teeth. In this particular case the decay began before the tooth was fully in position, so that the first beginning was closer to the incisal portion than usual. Caries penetrated the enamel in this rather broad line, reaching from mesial to distal. Then the tooth moved farther exposing more of the crown, and decay again attacked the perfect enamel to the gingival of the first area decayed. This latter is now showing as a second belt of whitened enamel from which the cement substance is dissolved out from between the enamel rods, but none of the rods have fallen out. Here we are dealing with something apparently different from the decays we have been considering. In the pits in occlusal surfaces the beginning of decay is well covered away from washings by the general saliva. The beginning of decay in the enamel in proximal surfaces is confined to surfaces that make near approach to other surfaces, forming a narrow space that prevents cleaning by the ordinary motions in chewing food. But on the buccal surfaces we have decay beginning on the fully exposed surface where it has every opportunity for free washing by the saliva as in any other position. But they are as strictly localized as any other.

These decays give the best opportunity for the study of gelatinous plaques covering over the surfaces attacked. Although I cannot always demonstrate the existence of zooglea or gelatinous plagues in these positions, I believe they have existed in every instance. The existence in the person of the condition of the bodily fluids, especially of the saliva, which give opportunity for the formation of this gelatinoid material, is probably responsible for the difference between susceptibility and immunity to dental caries. It is not difficult to copy this condition artificially by placing a gold band about a tooth imperfectly cemented. Micro-organisms will grow between the tooth and the band in the uncemented parts, producing acid. The covering by the band will prevent this being washed away and it will act upon the enamel, producing caries. In this way I have several times produced caries in persons ordinarily perfectly immune to caries, at least who never had any other caries in their teeth.

---

* At this point a number of pictures were introduced illustrating the cutting out of grooves in occlusal surfaces for the purpose of obtaining a suitable point for the finishing of fillings.

The decay in this tooth presents another feature that is important that we study. You will note particularly that caries of the mesial surface and caries beginning on the labial surface have each extended until the areas have met on the angle. This event, unless it is merely an accidental condition in a single tooth, marks an intensity of the carious process that is very unusual. Last year in order to determine the frequency of this recurrence I had my examiner in Northwestern University Dental School make a special record of every well marked case presented. Out of ten thousand people examined, who presented themselves for dental operations, I could count all of these cases on the fingers of the two hands. Less than one person in a thousand presented a condition in which decay from a buccal and a proximal surface united across an angle. These facts mark the angles of the teeth reaching from occlusal to gingival as the lines of greatest immunity to the beginnings of decay, and the lines which should be approached, but never passed in closing a place for the laying of cavity margins in the treatment of all decays in the axial surfaces of the teeth.*

We come now to the last series of pictures for the evening. The lower bicuspids and molars of one side of the mouth with beginning buccal decays in each of the first pictures, and the illustration of the treatment in the second. Years ago I learned to dread these buccal decays near the gum line, for do what I would it seemed that decay would recur. Finally it became clear to me that the recurrence of decay was practically always to the mesial or the distal of my filling. I then began cutting the cavities to both the mesial and distal angle in the first instance and after this

---

* Here a number of other photographs of whole teeth with labial and buccal decays were shown and their especial characteristics commented upon.

I had no more trouble with them. Their treatment became as easy (except that they are generally very sensitive) and as certain in the results as the treatment of occlusal cavities. The second picture illustrates this. You will note that each filling is extended from angle to angle of the tooth, no matter how shallow the cavity or how small the decay. Furthermore, the gingival margin of the cavity is always so placed as to be covered by the free margin of the gum.

Patients can also do more for themselves in protecting against these decays than any others. Whenever the disposition to caries of these surfaces is noted the patient should be instructed to use the brush vigorously upon them three or four times per day (after each meal and if possible before retiring for the night) and taught how to do this most effectively. If this is effectively and persistently done, no more buccal cavities will occur.

Gentlemen, you have been very patient in listening to this over-long address — I thank you.

ORAL INFECTION.*

BY W. H. WHITSLAR, M. D., D. D. S., CLEVELAND, OHIO.

The mouth is the natural orifice through which food and water and much air is taken into the body. Therefore the mouth becomes the first resting place of many organisms which are not carried beyond the limits of the mouth by force. In this cavity are found suitable media for the development of most organisms. Some do not seem to proliferate to any great extent, or at least there has not been found the method of developing them outside of the mouth artificially, so that their growth is not well known. Over one hundred kinds of organisms have been found in the mouth, and from twenty to thirty are constant.

DISCOVERER OF MICRO ORGANISMS.

The celebrated Dutch scientist Leeuwenhoek in 1675 was the first to discover microscopically small organisms in the mouth. He found no less than five different organisms in a certain white matter between the teeth. A number of observers followed this discovery, but Ficinus, a physician of Dresden, in 1847 made considerable advance in the study of organisms of the mouths of men and domestic animals.

---

* Read before the Cleveland Academy of Medicine.

DENTAL CARIES.

Passing over the interesting history relative to the discovery of the various germs causing diseases we come to 1883 when Professor W. D. Miller, an American dentist residing in Berlin, and a Professor in the University, solved the problem of the ages relative to the true nature of dental caries, one of the most prevalent of all diseases. Professor Miller demonstrated that dental caries is due to a number of factors, but the principal and basal one is the growth of oral bacteria. These organisms cause a fermentation of the carbohydrates and albuminous foods, forming lactic acid principally, and this causes a disintegration of the inorganic portions of the tooth structure. As this disintegration ensues the animal portion serves to aid in the fermentative processes and the dentinal tubuli of the teeth allow the organisms passage toward the dental pulp, which in turn becomes infected.

Dental caries is not a modern disease. Civilized and savage races are all subject to it. The ancients had no immunity, for, Egyptian mummies 4,000 years old exihibit the same decay that is now observed. Dental caries is as old as the human race and probably causes more pain to the human family than any other disease. In this connection we have only to mention paralysis, neuralgias, glaucoma, amaurosis, otitis, convulsions, thrombósis of the sinuses of the brain, eczema of the face, and epileptic attacks as secondary affections caused by reflex action from decayed teeth. The bacteria are the original excitants of the disease. Other diseases mentioned later will augment the list considerably of those diseases which are of germ origin but have to do with the teeth and their surrounding tissues.

The mouth is especially adapted to the growth of micro-organisms. In it we find the proper temperature which is evenly maintained, an excellent media, required moisture, and the proper soil for the proliferation of bacteria is always provided.

The organic and inorganic substances found in the mouth which may serve as nutriment as well as media for the growth of micro-organisms are as follows: normal saliva, buccal mucus, dead epithelium, dental tissue softened by acids, exposed dental pulps, exudations of the gums conditioned by the irritation of salivary calculus, etc., and the accumulations of particles of food. (Miller.)

THE SALIVA.

We will mention a few facts relative to the significance of saliva. Pure saliva contains 0.15 per cent of organic matter and undergoes putrefaction slowly. Only when mixed with organic matter does it show marked signs of putrefaction, organic matter being necessary for the saliva to become a good culture medium. Saliva has a physiologic process to perform and according to Dr. Michaels of Paris, it represents more accurately the composition of the blood than any other fluid from the body and is the best medium for arriving at a conception of the status of nutrition, the urine being regarded by Michaels as of secondary importance.

Nutrition is the greatest factor in preparing all tissues to resist disease invasion, and nutritional changes are indicated by the saliva.

The saliva has often been noted for its poisonous qualities due of course to the presence of organisms. The poisonous effects of saliva were noted by the earliest writers. Galen saw a scorpion killed by saliva without the use of magic. Aristotle observed a girl whose bite was as poisonous as the most fatal snake-bite. Various observers from time to time have noted the poisonous effects of saliva. Ranaud and Lannelongue were probably the first who referred to the poisonous effects of saliva due to the presence of micro-organisms. Pasteur reported at the same time on experiments, but Collin was the first to obtain an incite into the true nature of the affection following the injection of human saliva. It has been established that a group of micro-organisms belonging to the coccus form occurs almost invariably in the buccal juices which when brought into the circulatory system may provoke the most dangerous diseases.

The buccal mucus of the mouth is identical with the mucus secreted by the submaxillary and sublingual glands. It is insoluble in alcohol, ether, chloroform, and dilute acids, but is soluble in dilute alkalies. It does not coagulate when boiled, belongs to the albuminoids and serves as nutriment for bacteria. The saliva and mucus therefore supply moisture and materials for the media in which organisms develop.

As for food, the oral bacteria derive it mostly from the particles of food collecting upon and between the teeth or in cavities of decay. The chief foods are the carbohydrates mixed with organic matters of the tooth or its pulp, and the exudations of the gums.

MOUTH BACTERIA.

There are pathogenic and non-pathogenic bacteria in the mouth. "Of pathogenic bacteria, the micrococcus of the sputum septicemia is the most important. This organism is an oval cocci, single or in pairs, as diplocci, or in short chains. They are surrounded by gelatinous capsules visible under 300 to 400 diameters. The oral cavity serves as a gathering point for this microbe which is sometimes carried into the lungs and at last some weak point gives a foot-hold for the proliferation of the organism and lobar pneumonia results." "It is a fact," says Professor Miller, "that capsule cocci have been repeatedly found in connection with a large number of different processes as follows: emphysema of pneumonia, in pleuritis, endometritis, diphtheritica, peritonitis, in cerebral meningitis, otitis media, abscesses of the mastoid process, retro-pharangeal abscesses, ozoena, rhinitis, coryza, and catarrh. Some even contend that the capsule coccus may be the cause of rheumatic diseases.

"It is probable that the sputum septicemia represents a group of nearly allied species so that we could account for the variety of diseases this form of organism seems to be connected with."

The pyogenic bacteria, i. e., staphylococcus pyogenes aureus and albus, and streptococcus pyogenes frequently gain access to the mouth. Professor G. V. Black, of Chicago, says they are generally present in the mouth and endanger every wound. Dr. J. Leon Williams of London, another noted authority, supports the views of Professor Black. Besides these organisms Pane's pneumococcus is found in the saliva of healthy persons as well as of those having pneumonia. Blondi found in a person suffering with puerperal septicemia the coccus salivarius septicus. The spirillum sputigum is found in the mouths of all human beings. The germs of syphilis, tuberculosis, diphtheria, hydrophobia, thrush, ray-fungus, etc., excitors of grave diseases are able to maintain themselves for a considerable length of time in the oral cavity.

ORAL INFECTION.

Micro-organisms enter and infect the mouth in various ways i. e., mechanical injuries to the mucous membrane; through gangrenous dental pulp resulting in abscess and secondary septicemia or pyemia; resorption of ptomaines; pulmonary diseases caused by inspiration of particles of salivary calculus containing bacteria; excessive fermentative processes of the digestive tract caused by swallowing of microbes and their products, infections of the oral and pharyngeal cavities where tissues have low powers of resistance caused by disease and injuries. (Miller.) Syphilis, typhus, diphtheria and diabetes would lessen the powers of the normal mucus membrane.

It seems superfluous to say that germs may be carried to the mouth with clinical thermometers and any instrument for the performance of operations unless sterilized.

Examples are numerous of serious results following extracting of teeth and lancing of gums. Tetanus, septicemia, pyemia, meningitis, pneumonia, syphilis, etc., follow in the wake of careless operators.

Inflammation of the dental pulp as a rule is due to its exposure and its direct influences of micro-organisms. Death of the pulp leads to pericementitis and this may result in alveolar abscess. Alveolar abscesses are infectious and may lead to osteomyelitis, ostitis, necrosis, metastatics abscesses, gangrene of lungs, pleuritis, pericarditis, septicemia, pyemia, meningitis, tetanus, fistula of the breast, indigestion, sterility, abscess of the hip, blindness, etc.

Time will not permit me to go into detail concerning all the infections of and from the mouth, which are most interesting, including syphilis, tuberculosis, periostitis and necrosis of the jaws, stomatitis, etc.

PYORRHEA ALVEOLARIS.

I desire, however to call your attention to a very common condition met in the mouth which is a great factor in the production of diseases in general. We know that the mucous membrane of the mouth is very susceptible to the action of certain germs of infection as syphilis and tuberculosis, and that their destructive influences are great. It is therefore easy to perceive how the various organisms and their fermentative products produce upon the normal tissues conditions that lower their vitality and functions. Often the sense of taste is obliterated and in all we have a mouth that compares with a "spoiled" stomach. The last named often arises from the conditions of the mouth.

In 1756 Pfaff recognized the importance of putrefactive processes in the mouth. He says, "As a result of tartar accumulating about the teeth they become loose and a very disagreeable odor is emitted from the mouth which is often attributed to the innocent stomach." We often meet people whose teeth are covered with a thick deposit of tartar, mucus, food and organisms; the gums bleed easily and are inflamed and suppurating. Large quantities of pus are constantly being exuded into the mouth only to be swallowed and become absorbed into the system. This condition of the mouth is frequently met with, and next to caries causes the loss of more teeth and also promotes diseases of the digestive tract and the nervous system beyond conception.

The disease is in reality a chronic inflammation of the peridental membrane and periosteum, necrosis of the bone, and more or less inflammation of the gingivae. It has a multitude of names owing to the differences of opinion of observers, but it is commonly called Rigg's disease, or "pyorrhoea alveolaris." There are so many features of the disease that no one name seems to fit all phases.

TWO GENERAL CLASSES.

There are two general classes, one in which there is loosening of the teeth and attachments of the peridental membrane and a uniform wasting of the alveolar process with a gradual evulsion of the teeth without any deposit being found upon them. In the other phase there are pockets, then seruminal deposits are found upon the roots. These deposits are smooth or granular, in sheets or islands, and they may or may not cover the whole side of the root as deep as the pocket extends. With the destruction of the peridental membrane the alveolar process is destroyed. In all these conditions micro-organisms are found which at first are anaerobic. Pus is elaborated extensively in the great majority of cases and this is without question one of the greatest sources of infection known to the body. It is often entirely overlooked in the treatment of disorders of the stomach and of the nervous system. It is in this condition of the mouth that the teeth become loose and mastication is seriously interfered with. Hence, indigestion plus pus infection equals mal-nutrition and auto-intoxication, followed by anaemia and nervous prostration. Cases could be cited wherein these indications are daily observed and health restored without the use of internal remedies. The disease is confined to the adult and rarely found in children.

ETIOLOGY OF PYORRHEA.

As to the etiology of "pyorrhoea alveolaris," opinions vary. The predisposing causes are hereditary influences, irregular teeth, (i. e. malocclusion,) debilitating diseases, local catarrhal conditions, mechanical injuries, and the presence of salivary and serumal calculus. Some believe that bacteria cause the disease, and there is no question but that they are important factors in the disease. We can say that the majority of cases are induced by accumulations of salivary calculus and other substances, together with filth, and lack of care of the teeth and mouth.

The gouty diathesis is considered by many as the cause of the disease. Seruminal calculus found upon the roots of the teeth is made up mostly of the urates of lime, hence one would naturally infer that a gouty diathesis is the cause. Catarrh of the mucous membrane is another cause, contributary at least.

Dr. Eugene Talbot of Chicago has written exhaustively upon the subject. His book entitled, "Interstitial Pericementitis," is a very complete work. He considers autointoxication as one of the greatest etiological factors of the disease. Others consider syphilis and tuberculosis as primal factors. We have noticed it frequently occurring during and following pregnancy.

The metallic poisons taken into the system are promotors of the disease and sometimes the disease is mistaken for metallic poisoning.

While great stress should be laid upon the consequences of "pyorrhoea alveolaris" alone, it must be conceded that sometimes toxic effects are the greatest when local effects are least. Pus organisms find lodgement in many hidden places in the mouth, under plates, bridges and crowns, and although the mucous membrane is resisting to disease, still violent tonsilitis, stomatitis, and pharyngitis are often due to the infections from these sources. Indeed these nests of infection are often overlooked in the treatment of these diseases. Again, the stomach during its inactivity, when the gastric juice is not in demand, becomes weakened by the absorption of pus and the organisms that have come from the mouth. This results in nausea, distressive pain, depression and weakness, distaste for foods, and a sallow skin. This condition of the stomach Dr. Wm. Hunter calls "Septic Gastritis," and cites cases of such infection traceable to the mouth. These cases yield to local treatment.

TOXIC NEURITIS.

Dr. Hunter in his observations has found that in frequent cases of extreme oral sepsis that nervous effects such as numbness, tingling in the hands and feet, loss of knee jerk, marked wasting of certain muscles, and local palsies were immediately improved by the removal of oral infection. He designated this affection as "toxic neuritis". A well known neurologist informs me that he never treats neurasthenia without having the mouth and teeth put into a healthy condition.

TREATMENT.

The treatment of all these conditions is first to remove all the foreign deposits upon the teeth and extract those teeth and roots that cannot be made healthy and serviceable. The patient should be advised to remove artificial dentures during the hours of sleep, and pay extraordinary care to the daily cleansing of them with brush and pumice powder. For the natural teeth powdered pumice stone may be used as a cleansing powder once or twice a month. At all other times a powder made up mostly of powdered prepared chalk is sufficient. Tooth pastes are not desirable. The market is full of washes for the mouth. In suppurating conditions of the gums first clear away all deposits upon the roots of the teeth and remove the necrosed processes of bone. This operation is performed with delicate instruments, and often requires many sittings and hours of labor and patience. The detritis is washed out with dioxogen. The various solutions of iodine, lactic acid, trichloracetic acid, zinc, argyrol, nitrate of silver, sulphuric acid, aromatic sulphuric acid, etc., as are best adapted, are injected into pockets from one to three times per week as the case demands. Massage of the gums is of much importance and also the best care of the teeth three or four times a day is required. Many cases can be cured but some of the dental profession think "pyorrhoea" is incurable. Sometimes loose teeth have to be held in place with splints. Those teeth which are unsupported with sufficient alveolar processes become permanent irritants and should be extracted.

Systemic treatment pertaining to the conditions of the body should be given, remembering that the bowels and kidneys are the safety valves through which most of the poisons of the body are eliminated.

Members of the Academy, the time limit for such a paper is too short.

Upon the subject of "pyorrhoea alveolaris" so called, much could be presented. I have been unable to touch upon the surgical infective diseases in this paper. Permit me to suggest however, that it is quite as important to disinfect the oral cavity previous to an abdominal operation involving the alimentary canal as it is to disinfect the abdominal wall itself.

In conclusion, please remember that the oral cavity is the open door to the body, and that oral infection is a barrier to human health and happiness.

PYORRHOEA ALVEOLARIS.*

BY CARL D. LUCAS, D. D. S., INDIANAPOLIS, INDIANA.

The Etiology of Pyorrhoea Alveolaris is a subject of very much controversy. The subject may be divided — subdivided under two heads, according to the existing symptoms: Incipient Interstitial Pericementitis and Chronic Interstitial Pericementitis.

Incipient Interstitial Pericementitis is due to: (1) an accumulation of salivary calculus at the gingivus, (2) the presence of an illy fitting band of a crown, (3) rapid wedging, (4) malocclusion, (5) rough unfinished margin of a filling, (6) splinter from a tooth-pick, or any irritant at the gingivus which would impair the functional activity and lower the resistance of the gingival margin of the gum. If the irritant be not removed the localized inflammation produced by the irritant at the gingivus becomes more deeply seated, extending into the interstitial pericemental membrane, lowering the resistance of this membrane and causing partial or complete loss of function, or a local asphyxia of the pericementum which is the first stage of tissue necrosis or moist gangrene.

Incipient Interstitial Pericementitis in the oral cavity of a patient predisposed to uratosis, if, by non-removal of the irritant, it is allowed to become a chronic interstitial pericementitis, which is accompanied by an osteonabrosis, or atrophy of the osseous margins of the alveolar sockets will surely result in pyorrhoea alveolaris.

---

* Read before the Eastern Indiana Dental Association, New Castle, Ind., May, 1906.

THE PERICEMENTAL MEMBRANE.

The pericemental membrane is composed of a variety of white fibrous connective tissue with fibers of the yellow elastic variety forming a dense feltwork. The membrane is nourished by one capillary blood vessel which enters the alveolar socket at its apical extremity. This capillary vessel divides and subdivides in passing through the membranous structure and these minuter branches penetrate the walls of the alveolus and anastomose with the arteries which supply the oral mucous membrane. The lymphatic vessels take their rise in nearly all parts of the body and take up from the worn out tissue that portion which is still available for purposes of nutrition and return it into the veins close to the heart. The disorganized products of functional activity are eliminated from the pericementum by few and exceedingly minute lymphatic vessels which follow the course of the capillaries in the inter trabecular substance of the membrane. Consequently the nourishment and eliminative functions of the membrane are inadequate in the event of a chronic inflammation.

URATOSIS.

Uratosis — deposition of crystalline urates in the tissues or fluids of the body — always occurs in bruised, chronically irritated, partially or completely devitalized interarticular, or interstitial connective tissue.

Uric acid belongs to the propane group. Its formula is $C_5 H_4 N_4 O_3$. It is a white crystalline powder almost insoluble in cold water, and only slightly soluble in hot water, but is freely soluble in alkaline solutions. It forms crystalline urates when chemically united with certain alkaline salts. Acid ammonium salt is the material from which the acid is made. Uric acid may be decomposed by heat, evolving ammonium cyanite and carbonate, leaving a nitrogenous coal. Uric acid may be detected in sanguinary calculus by moistening with nitric acid, drying, and moistening the dark red residue with ammonium hydroxid. A deep purplish red color is obtained, the product thus formed is called Murexide.

Uric acid occurs free and in the form of salts in the urine of persons who are predisposed to uratosis, most often as a salt.

Uratosis is caused by the lack of functional activity of the excretory organs in throwing off the urea — the effete product of the using up of tissue in vital function. The urea which is not eliminated by the liver, kidneys, bowels and skin, is chemically combined as it forms, with the alkaline sodium phosphate of the blood, forming urate of sodium, and as such it passes through the circulatory system. The blood is always alkaline, but its alkalinity varies, therefore the amount of uric acid which it will hold in solution varies. When the blood becomes overladen with the urate of sodium it deposits the urates whenever a region is found which is easy of access.

Having the pericemental membrane composed of white fibrous connective tissue — in which variety of tissue urates are prone to be deposited—in low state of resistance as in Chronic Interstitial Pericementitis, the nourishment and eliminative functions of the membrane inadequate to cope with the abnormal condition, the great amount of stress brought to bear upon the tissue in mastication, the patient predisposed to uratosis; these conditions are ample to invite the encroachment of uratic deposit, within the inter trabecular cement substance of the pericementum and finally upon the cementum of the root of the tooth, deep within the alveolar socket. These uratic deposits, known as sanguinary calculus, have very irregular granular, rough surfaces. By the constant contact of their roughened surfaces with the pericementum deep within the alveolar socket, and the more or less constant movement of the tooth root upon which the calculus is attached, a constant irritation is maintained at the points of attachment of the calculus.

This constant irritation deep within the socket causes a lowering of the vitality of the pericementum in this region and causes an exudation to be thrown out which is not entirely taken up by the lymphatics. This exudate loses its organizing power, becomes infected by pyrogenic microörganisms, degenerates and forms pus. The leucocytes, or white blood corpuscles which have migrated to the infected territory, die, and become a characteristic pus corpuscle. The plasma melts down and is mingled with the extravasated serum of the blood. The tissue in the immediate vicinity is infected, degenerates, breaks down and a pus pocket is thus formed.

The treatment of the disease should be local — removal of the irritant — and constitutional, to restore to normal function the eliminative organs. But I will not go into the methods of procedure of the treatment for the paper was not intended to outline a treatment of the disease, but to help to solve the mystery of the etiology of pyorrhoea alveolaris.

TREATMENT OF THE DENTAL PULP.*

BY J. D. WHITEMAN, D. D. S., MERCER, PENNSYLVANIA.

The treatment of the dental pulp is probably the most delicate, complex and exacting operation that we are called upon to perform.

Reference to the dental literature of fifteen years ago will show that pulp capping was receiving as much consideration as, or perhaps more than, any other. The dental student at that time was taught that a pulp should not be destroyed until after all efforts to save it had failed. But owing to the number of failures that resulted in this practice, it became generally admitted that a pulp which had given discomfort or was found exposed should be destroyed and the canal or canals filled, and judging from our literature of the present, one would conclude that that was still the accepted method of practice, but as we turn to the advertising pages of our magazines many preparations are offered us for the successful capping of pulps exposed, and even bleeding and inflamed, and mummifying pastes that would make the removal of a pulp, in case devitalization were decided upon, a positive waste of time, and from the large sales of such preparations it is obvious that they are being extensively used.

It is not the purpose of this paper either to condemn or commend the use of these preparations, but to introduce the subject for general discussion by the members of this society, among whom are the most experienced and most eminent men of our profession practicing in a now somewhat extended section of two states, and I believe that such a discussion would reflect the present status of pulp capping and pulp mummification, and would be so accepted, at least by our own members.

---

* Read before the Lake Erie Dental Society, Cambridge Springs, Pa., May, 1906.

The question with regard to pulp capping is briefly this:—Do any of the methods or any of the preparations or formulas we have now that we did not have twelve or fifteen years ago, when the results of this practice were so unsatisfactory, enable us to successfully cap pulps now that we could not cap successfully then, and if so, under what conditions?

The subject of mummifying of pulps has been before this society several times since it was introduced about ten years ago; and each time the subject has been brought up a few have stated that they were using one or more of the different formulas or preparations in an experimental way and with generally favorable results up to that time.

The paper and clinic of Dr. Phillips, presented at our meeting two years ago, in which he reported several hundred cases of pulps treated with a preparation of iodoform, cocaine, etc., and with complete success, showed a record which few indeed can equal by the accepted method of complete removal of pulp and the filling of canals.

The method with one formula in particular, that of devitalization with arsenic, removal of the pulp from pulp chamber only, filling chamber with paste consisting of thymol, oxide of zinc, and glycerin, and overlaying with oxyphosphate, has been in use for about ten years and another consisting of iodoform and cocaine, chiefly, nearly as long and several others for a somewhat less period, and while they have been undoubtedly used the most freely by the slovenly, indifferent and careless, and mostly in the employ of the illegitimate advertiser, which has undoubtedly affected the status of this practice, and has deterred many of the conservative element from employing it, it does not affect the real merit of the method itself. The fact is, it has been employed by the skillful and thorough, or must I say otherwise thorough, to a sufficient extent, and for a sufficient length of time, to determine definitely its merit.

It is to such that this paper is chiefly addressed as it is by the percentage of their successes or failures that the correct status of the mummifying paste is to be established: and the writer believes that it is greatly to be desired that it be established now.

If it is a good thing let us all avail ourselves to the fullest extent, and at once, of its benefits and not leave it for the slothful quack or the careless, lazy or indifferent.

We should not forget the lesson taught us by the failure of the conservative, legitimate practitioner to see the possibilities of the local anaesthetic until the charlatan had reaped his harvest and brought it into disrepute.

The local anaesthetic has proven his sheet anchor and remains to this day his main support. I firmly believe that the persistent refusal of the too conservative, legitimate practitioner to employ the local anæsthetic in the extraction of teeth, has been more responsible for the use and prosperity of the modern quack, than any other one cause. The people were compelled to go to him, because of the refusal of the conservative dentist to meet the demand.

Abundant evidence of a growing appreciation of the value of the natural teeth, especially with the common people, is a matter of daily observation with every practicing dentist, and should be indeed most gratifying to him, but the number of teeth, especially the posterior, that are lost owing solely to the inability of the patient to pay a sufficient fee to compensate the dentist for the arduous labor of treating and filling them by the old and established method is a matter to be deplored.

Now if there is a better way or a way just as good, or a way sufficiently good to justify the operation and for less money and at the same time do justice to ourselves, let us for suffering humanity's sake, meet this demand and save these teeth. This is not only a duty, it is "good business," and incidentally let us view the question from the strictly business or financial aspect.

It is exceedingly doubtful if we could save much time or will ever be enabled to reduce our fees for treating and filling the anterior teeth, including the biscuspids, by using the mummifying method: but to devitalize the pulp of a molar tooth, remove it, sterilize and fill the canals and cavity in a thorough and painstaking manner, requires from two to three hours and is probably as exhausting and trying an operation as any we are called upon to perform, and one for which the average dentist receives less compensation, time considered, than for any other, and in many cases, owing to the tremendous loss of tooth structure necessary to gain access to the canals, the tooth is left in such a weakened condition that it is incapable of withstanding the stress of mastication for more than a few years at best; especially is this true where access to the canals must be obtained through a distal cavity, as it must be extended through the grinding surface to such an extent that the least subsequent decay occurring on the mesial surface leaves nothing but the thin lingual and labial walls without support when one or the other of these walls is most certain to give way, frequently leaving the tooth in such a condition that it is impossible even to crown it. On the other hand, to employ pressure anæsthesia and a mummifying paste one hour is an abundance of time to complete the operation, and in one sitting.

Now if the latter method is successful in affording the patient comfort and the tooth not being weakened by the excessive loss of tooth structure, is capable of performing its functions for a greater length of time, does it not become apparent at once that its adoption by us is imperative, and that we do not let the charlatan bring it into disrepute before we adopt it?

The quack has never approached us in results, with the possible exception in the extraction of teeth with the local anæsthetic, and let us see that he never does. He was quick to seize the opportunity then, and made the most of it, and we may be sure he will not be slow to do so again; and, continuing on the business side of this question, — if we can perform the same service with this method in from one-third to one-half the time that we would require in following the established method, we can afford to do it for less money. To this the public is entitled and may be depended upon to demand it.

I would not have you think for a moment that I believe any of our profession is guilty of withholding anything that they thought would contribute to the welfare of their patients, but it does seem possible that our zeal in guarding their interests might cause us unnecessarily to delay the adoption of a method seemingly so unscientific and radically so different from the old established one which we have followed so conscientiously.

The desirability, however, of such a method, possessing as it does so many and important advantages, is a sufficient reason for the prompt adoption of the successful method or formula as soon as its permanence is assured. While if the effect of the antiseptics or preservatives used are only temporary, becoming exhausted after a few years, the result would be so calamitous that it should be as promptly condemned.

It is for these reasons that this subject is presented and it is hoped that it will be discussed freely and frankly, that both sides, if there are two sides, may be heard and as carefully considered as the importance of the subject seems to demand, that the exact status of the practice may be definitely determined.

PROSTHETICS.*

BY J. MAURICE CROSBY, D. D. S., BRADFORD, PENNSYLVANIA.

This is a subject which necessarily interests us all. Situated as we are, in the smaller cities, it is our duty, pleasant or otherwise, to give this important branch of dentistry a considerable portion of time and attention, the lack of which will almost invariably lead to unsatisfactory results.

The busy operator is apt to devote his time and talents too much, I think, to operations of the mouth, to the detriment of the plate work. While very often our patience is tried by the lack of co-operation on the part of the patient, we should see to it that we have faithfully performed our duty to our patients, as well as ourselves.

I doubt if I have anything original to offer, but will endeavor to emphasize some of the important points to be observed.

Causes of failure may be attributed to the following:

Imperfect impressions.

Incorrect bites.

Faulty articulation.

Neglect in equalization of pressure upon the hard and soft tissues of the mouth.

Too much rubber in packing, preventing the two halves of the flask from coming completely together, thus destroying articulation.

Excessive pressure in closing the flask, causing spreading of the cast.

Careless and insufficient trimming of the plate.

Lapse of too much time between extraction of the teeth and insertion of the plate.

Failure to promptly collect the fee.

---

* Read before the Lake Erie Dental Society, Cambridge Springs, Pa., May, 1906.

On the patient's part:

Failure to promptly pay the bill, resulting in lack of co-operation with the dentist.

Neglect to return for the correction of articulation and impingement upon the soft tissues.

THE IMPRESSION.

As a general rule, plaster of Paris is the material that will yield the best results, though a good modelling compound properly manipulated will sometimes be the best thing to use. Terra plastica is recommended for metal plates, as the metal can be poured into the impression direct. A combination of wax and plaster is very often indicated, wax being used first to obtain a rough impression, chilled and covered with a thin coating of plaster and pressed to place in the mouth. In lower impressions, as soon as the impression material is inserted, we should instruct the patient to open and close the mouth and project the tongue as far forward as possible in order to outline the muscles distinctly.

IMPERFECT BITE.

Many failures are due to an imperfect bite. Our literature is full of instructions as to the proper taking of the bite, but whether we instruct our patients to apply the tongue to the roof of the mouth as far back as possible, and have a little rehearsal before inserting the wax, carefully explaining the importance of this particular part of the operation, or whether we simply insert the wax and have the patient close the mouth upon it, doing so several times to make sure, none of the instructions given are universal or will be correct in all cases. The only safe way is to mount the teeth on trial plates and try them in the mouth.

TRIAL PLATES.

Wax trial plates are a delusion and a snare. We should have something that will not change shape by the heat of the mouth, or by the pressure of closing the jaws. The perfection base plates, as shown, answer the purpose admirably.

When the trial plate is inserted, particularly in the lower jaw, attention should be given to the way it keeps in place, or fails to do so. If it rises on its own accord, press it down again.

take the corners of the mouth with both hands, and gently pull up on them. If the plate lifts with the pull, the flanges or rims are too long, and are resting upon the muscles of the cheek or the integuments of the lip. The outer rims should be trimmed down until the plate stays in place.

Then have the patient raise the tongue towards the roof of the mouth; if the plate becomes displaced again, the inner rim needs trimming. Trim the rim until the plate stays in place, even when the tongue is raised and the cheeks are manipulated. Lack of attention in this important detail often leads to failures in lower dentures. In upper dentures, I believe the best results are obtained by uniform pressure and absolute contact. This is best obtained by carefully noting the hard and soft places in the mouth and by judicious scraping of the soft parts on the model. The hard places on the centre of ridge are best relieved by one or more thicknesses of No. 60 tin foil. The foil is cut to fit the area of hard surface which has been previously marked on the model, and is held in place by thick sandarac varnish.

ARTICULATION.

The process of setting up teeth is almost always done on a plain line, or hinge articulator. At best, provision is only made for articulation in one position. Most articulators are provided with only one movement, possibly with the idea that it is easier for a person wearing artificial teeth to learn to restrict the natural chewing movement to that of the articulator. However, it is doubtful if the Creator would have made the temporo-maxillary articulation as complicated as it is, if a simple hinge would have answered equally as well. In the incising or grinding positions there is likely to be contact at only one point, which may be at the cuspids or bicuspids at one side, while there is none on the other; or the incisors will touch, leaving a space between the molars, causing the plate to tip. All this can be avoided by the use of the anatomical articulator, giving the lateral and forward motion of the lower jaw as the conditions exist in the mouth. Plates articulated in this way give the greatest satisfaction to both dentist and patient. The possibility of tipping the plate in mastication is entirely eliminated in any position.

To overcome the expansion and contraction of plaster, Spence's plaster is recommended for impressions and models, as it will neither shrink nor expand, and will stand a pressure of 2,000 pounds without change of shape.

DENTURES SHOULD BE INSERTED SOON AFTER EXTRACTION.

Many dentists are advising patients to wait for three to six months for complete absorption of the alveolus, before taking the impression, and many patients think no harm can result if they supplement this advice by waiting a year or two. There is no greater cause for dissatisfaction than this unreasonable delay. In most cases, the absorption is rapid, the maxillary ridge is much reduced; contour of the face and the natural expression are lost; the lower jaw reaches downward and forward in its effort to touch something, thus stretching the muscles which normally hold the condyles in place, and causing a prognathic condition. The art of proper masticatory movement is lost and is most difficult to restore. When the plate is finally inserted, conditions are met which are very trying. The bite is uncertain and seldom in the same place; the effort to masticate food is the labor of weeks. The patient may be satisfied, goes home, is subjected to the criticism of the sisters, cousins and aunts, who, accustomed to the appearance of the face as last seen, begin to point out many apparent and imaginary defects, greatly to the disgust of the dentist, as a reward for his best efforts.

To prevent all this, we should educate the people to have plates made immediately after extraction, within a few days. The maxilla is then nearly normal, a good ridge is present, there has been no change of facial expression to speak of. The muscles are all in place, and the closure is yet the same. Let this first plate be worn for several months, or as long as necessary; then make it over. The result will be that these temporary plates will be the success of the permanent ones.

ADDRESS.*[1]

BY J. F. STEPHAN, D. D. S., CLEVELAND, OHIO.

It becomes my pleasant duty, through your friendly courtesy, to preside over the thirty-ninth annual meeting of this association, and I want to assure you that I am profoundly grateful for the honor you have conferred upon me.

In assuming the duties and responsibilities incident to the presidency of our state organization, I should feel my inadequacy did I not know that I shall have your indulgence in my shortcomings and your hearty co-operation in my endeavors to give this meeting the high place it deserves.

Fortunately this society does not depend upon any leadership, but upon the thorough organization and the faithful and zealous co-operation of all of its members.

Men gather in bodies of this kind to freely discuss the advancement made in professional knowledge and manipulative skill and to cultivate goodfellowship.

It is the problem of the present, and it will ever be the problem of the future, to search out the causes of the phenomena with which we have to deal, and to establish our procedures upon a scientific basis. There has been greater advance along these lines in the past ten years than in the half century before.

We have only begun; behind us are only the first steps; but ahead there lies the field of limitless discovery and advancement. The demand of all thinking men is for the causes of phenomena so that they may intelligently apply that knowledge to the ends of practice.

This organization has played no small part in the profession's progress, and we look for still greater advancement in each year's deliberations. We have accomplished much and have justly earned our right to a place in the healing art.

But let us not forget as we recall the result of our achievements that as a society and a profession we are strong only as the individual is strong.

To maintain the position our profession has attained and to do our part to uplift it, we must become broad enough to look above and beyond our limited horizon, and to interest ourselves with the affairs and well-being of our fellow-men. Since each one of us is a debtor to his profession, he is also the custodian of its honor and is responsible in his degree for its progress.

---

*Read before the Ohio State Dental Society.

[1] This address was held up by committee and it but recently reached the edtior.

The knowledge we possess is given us as a legacy to be held in trust to be passed on to the future generations. From earliest time the foundations for our present knowledge have been growing. Reasoning powers have been given to every intelligent mind to weigh and analyze the subjects that are daily brought in contact with the mental powers.

The human mind cannot at once unlock the secrets treasured in the universe. Time, perseverance and patient research by investigators in all departments of science are necessary to unvail her unsolved mysteries before they are added to our treasury of knowledge. Since it is the evident purpose that we progress, reasoning power is given us that we may discard that which is false and hold fast to the truth, adding this to whatever of knowledge we possess.

It is true that the practice of dentistry tends to narrow men, and that there is nothing in the actual work to develop in them the spirit of participation or co-operation. This is all the more reason we should attend our professional meetings. True, the influence of the society counts only in as much as the work of each individual counts, but each one of us counts for one in adding our mite to the success of its meetings.

In the intense effort along material lines manifest in the present day it would sometimes seem that the true professional spirit was in danger of being lost. It is this spirit which imparts to man the impulse to work unselfishly, to dig out the hidden mysteries of the forces of nature and apply them to the betterment of the profession. It gives him the desire to work that the knowledge he acquires may lead to the alleviation of human sufferings and not to establishing a selfish reputation.

His work must be well done because its influence passes far beyond his limited horizon, and the welfare, not only of our society and our profession, but humanity, depends on it.

The man whose life is intelligently ordered is always preparing himself for the highest demands of his work. He is not only doing that work with adequate skill from day to day, but he is always fitting himself in advance for more exacting and difficult tasks.

The athlete through exercise produces new muscle, the musician through practice gains speed and accuracy, and the student through education increases brain capacity. Now, since new thinking creates new brain power, there can be no estimate to the value of the discussion of the subjects and clinics presented here.

Let us discuss these questions freely, not knowing that perhaps something we may have to say may prove the opportunity to some one else to complete his work.

The necessity to surmount some obstacle or limitation has led many to the brink of some great discovery. Do not think that I wish to open the door of our meetings to long, tiresome and irrelevant discussions. It is always detrimental to the success of a meeting to have some few among those who discuss the essays exhaust the possibilities of the subject in the first few moments, and then, by repetitions and dragging in things foreign to the subject, waste valuable time. Emerson designated such people "devastators of a day."

In the clinics we have an opportunity to compare our attitude toward our patients with reference to the work they receive at our hands as compared to that given by other operators. With your assistance it will be my endeavor to call these meetings promptly. If we fail to do our duty in these matters we make it easier through an unconscious influence for someone else to shirk also. Therefore, let me urge each one of us to attend the sessons promptly as a duty we owe those on the program, the society and each other.

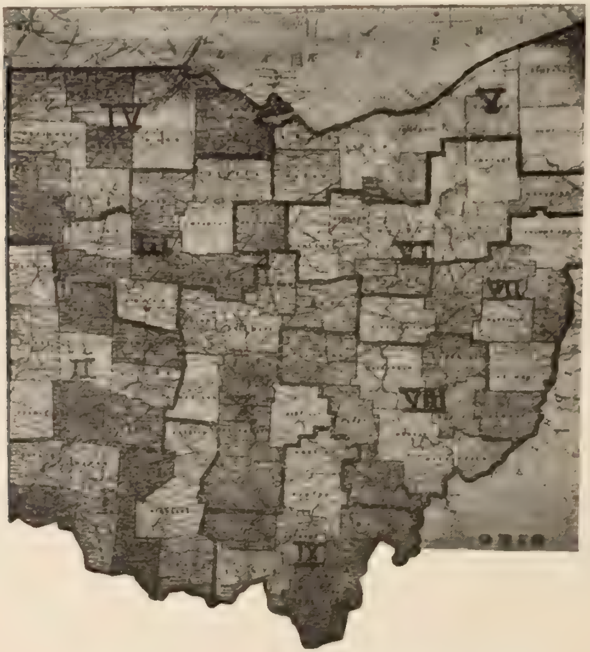
Through organization and the consequent accumulation of energy the strength of individuals becomes a power in the support of the principle for which they stand.

We are much benefited by organization, not only directly through the program presented, but much valuable knowledge is gained from private conversation with fellow-dentists. This feature of dental society meetings cannot be over-estimated, and the non-member does not realize its value.

Let the older members encourage new members, and bring those who have not come to realize the importance of our work into the society. Out of some 3,500 dentists in the state we have only 335 members. Fifteen counties are entirely without representation—one-fifth of the state. It is for this reason we wish the good work of the membership committee to go on even more rapidly than it did last year.

Believing that our membership should be representative, I have arranged a plan whereby that might be accomplished: the state to be divided into ten districts, each of from ten counties, as indicated in the accompanying engraving.

A representative from each district should be responsible for the membership of his district in this society. He could also assist the executive and clinic committees in securing material for the program, and in other ways enlarge the usefulness of our organization. Being selected from his own district he would be familiar with the territory, and could render better service than some one selected at random over the state. A delegate body of this kind could also exert an influence in the formation of local societies throughout the state. Should our membership become representative, we will be able to exert a power toward better dental legislation.



It has seemed to me that much valuable time has been lost each session balloting for candidates for membership. The application for membership of the eligible dentists should be handed to the chairman by the members of this enlarged committee. The chairman should post these names at the opening of each session on a blackboard specially arranged for that purpose and so place it that every member may read it. He should then give them to the secretary of the society who should place them before the board of directors for their consideration.

At a meeting to be held immediately after each session of the society, the board of directors should consider these applicants and elect the applicant to full membership or reject the same, if advisable to do so. The names of those elected should then be read by the secretary at the opening of the next session.

When the application is handed to the committee, at such a time that the board will not have the opportunity to act, a card of admission to the meetings of the day might be issued by the chairman of the membership committee, so that the applicant may receive the benefits of the session.

Placing this matter into the hands of our executive board will give us much more time in which to consider our scientific subjects.

There is a growing demand for a universal exchange of licenses to practice dentistry. Reasonably uniform requirements should be promptly made between state boards and reciprocity made possible for the exchange of licenses. I believe it would be in the line of progress to suggest to our board of dental examiners that they formulate a plan for an interchange of certificates with all states in which the educational requirements are equal. The time is sure to come when the certificate to practice issued by one of our state boards will not only entitle the holder to practice anywhere in the country, but abroad also.

The work of this society in the past, and the work it is destined to do in the future, will prove that we are continually pressing toward higher standards. Our clinics demonstrate new ideas and teach new methods of performing the ordinary operations, and are often of great value. Their influence is limited to the very few who may be fortunate to get close to the clinician. I believe that a report of clinics, given at a stated hour late in the session, together with a discussion of the same, would greatly increase their value. In order to accomplish this they should be held at some time other than on the last meeting day, as has been customary.

New appliances having great merit are constructed many times at no small cost in time, labor and money, which, through some reason or other, are not shown beyond the confines of the inventor's office. These may be of infinite value to the profession, and I believe a committee of at least three members should be appointed to make an exhibit during the clinic, which shall contain the latest inventions and improvements.

Through the efforts of the new appliance committee a demand for many excellent devices might be created, so as to make it advisable for manufacturers to secure the models and place the instruments at our disposal.

I have endeavored to outline a few points in which we might possibly give our association greater influence than it has ever known before.

If I have emphasized the value of the individual effort of its members, it is because I honestly believe that without that enthusiasm our meetings cannot receive their full measure of success.

PRESIDENT'S ADDRESS.*

BY S. D. RUGGLES, D. D. S., PORTSMOUTH, OHIO.

The best way to become acquainted with people is to live with them, and the same holds true with institutions in general. In the past seven years I have been present at all meetings of the society and its directors, and have but few suggestions to make concerning changes. We are in good condition financially. The expenditures have been for the purpose of securing the best talent the profession affords. You will agree with me that our committee has chosen wisely in this matter.

The growth has been especially good the last two years, in fact we have almost reached our limit under present conditions. But right here is a point to be emphasized. Our last president advocated the districting of the state as has been done by Illniois. His suggestions have not had due consideration, I fear. Dr. Black says that the method adopted by Illinois has been eminently successful, the state membership having been trebled in the past two years. Too much praise cannot be given the various committees for this splendid meeting, and, gentlemen, it is my sincere wish that you will continue your hearty support to those who labor for your benefit regardless of any compensation.

---

*Read before the Ohio State Dental Society, December, 1905.

It has been the custom heretofore to have all applications approved by the directors and then submitted to the convention for ballot. This requires considerable time that might be used advantageously for papers or discussion. Few of the names read are known to the convention and the votes are cast solely upon the recommendation of the membership committee and the directors. Under such circumstances, it seems to me that the election should be left with the directors entirely. After the names are handed to the secretary by the membership committee, let all proposals be read in open meeting, or posted in a conspicuous place. This will enable any member to attend the next board meeting and enter objections, if there be such.

The report of the state board of examiners will follow this address, and the needs in the way of dental legislation will be made clear. Last, but not least, is the need for some means whereby the work of our profession can be limited to certain hours. By this is meant the indiscriminate use of our vital forces beyond the number of hours they should be taxed daily; this is ruining the constitution and robbing the dentist of rest and relaxation that is far more valuable than much fine gold. Is there no way whereby the office can be closed at night and on Sunday? Scarcely a week passes that a request does not come for Sunday work, but after explaining the need for rest upon the part of the operator, and inquiring into the patient's hours for work, it seldom happens that some time cannot be found when the patient could leave for short periods. This is a busy age, to be sure, but the busiest man, even though he serves another, can arrange his time as suggested if he chooses.

In ten years' practice I have yet to find the necessity for a Sunday appointment. True, cases do come to us that require attention day, night or Sunday, but these are the exceptions.

The life of the dentist is short enough without burning the candle at both ends.

◆

PRESIDENT'S ADDRESS.*

BY DR. G. F. BOWMAN, TIDIOUTE, PENNSYLVANIA.

It is with pleasure we welcome the members and guests to the 43d annual meeting of the Lake Erie Dental Association.

Forty-three years ago, when this society was organized, the founders builded better than I think they realized. During all these years our growth has been consistent and sure, until to-day we occupy a position of leadership in Northwestern Pennsylvania.

No profession remains at rest; the movement is either forward or backward, and while, from year to year material progress is sometimes difficult to mark in dentistry, the movement is surely forward, as even the younger men can bear witness.

That we do progress, even the pessimist among us must admit, if he will but look backward for the brief period of ten years. In this short time Black has given his researches in amalgam, and his system of cavity preparation, to us, both of which we are daily utilizing to our own and patient's profit.

Angle has systematized orthodontia, eliminating chaos in this important branch, until to-day every practitioner can, if he wishes, deal intelligently and effectively with almost any case of malocclusion presenting. Hand in hand with this advancement in the treatment of malocclusion, the late despised first molar has come into its own, being recognized as the most important tooth in an occlusal sense in the mouth, and treated with the respect which it so richly deserves.

Porcelain, in the form of fused fillings, like a ray of sunshine has brightened our outlooks, and raised our ideals. No longer are we compelled to build monuments to our lack of artistic skill in the human mouth, but by its use we are enabled to reach our ambition to closely imitate nature, placing our profession on a basis of true art.

In the past year Drs. Head and Poundstone have each contributed valuable papers on the cement problem in inlay work, placing this investigation on a scientific basis, from which viewpoint we may confidently expect definite results in the future.

The public is demanding, the profession anxiously seeking, substitutes for the metals as filling materials, as the metals with their difficulty of manipulation inflict extreme fatigue on both patient and operator, not to mention their other apparent and well known objections.

---

* Read before the Lake Erie Dental Society, Cambridge Springs, Pa., May, 1906.

Hence the interest being displayed in the artificial enamels.

While these new materials apparently have virtue, and add to our armament, yet we think they should be used with caution, the results keenly scrutinized, and the claims of the manufacturers as to crushing strength and permanence sharply questioned; time alone being able to answer these questions definitely.

Nothing we attempt is more commendable than our constant search for pain relieving methods. Several times in recent years it has seemed we were on the verge of success, only to have our hopes dashed.

Cataphoresis was one of our important failures, and more recently high pressure anesthesia has not been definitely without its disappointments to many of us.

That we will eventually eliminate pain in the excavation of carious teeth and other painful operations in the mouth it were idle to doubt. We have made many steps toward this goal already, and ought not to be discouraged, as the whole field of anesthesia is comparatively modern.

Whether this result will be obtained by new discoveries in Materia Medica, or the application of old remedies in a new way, one would hardly dare predict.

Commercialism has, of course, defiled us as it has every other profession, and while it is probably too much to hope for the entire elimination of the fakir from our midst, yet we confidently expect to see them grow fewer in number, and less prosperous as the moral tone of our profession is raised, and the public taught to more correctly measure professional ability.

The State Society has chosen one of our members as its president. No one has more richly deserved this honor than Dr. Arthur, for no one has labored more unselfishly, both as teacher and practitioner for the advancement of the profession than he, and I am sure the entire Lake Erie Association rejoices sincerely in his selection, as we know his true worth as a dentist and gentleman.

For any measure of success this meeting obtains, or profit the members derive from it, the various committees deserve credit, as they have worked earnestly and hard to this end, and I desire to offer them my personal thanks for their efforts, and the unvarying courtesy and good will they have shown me.

We may consider ourselves fortunate in our selection of a secretary. He is a hard worker in the interest of the society; invariably prompt to answer correspondence, and conducts his office in a business-like manner.

I would like to suggest the annual dues of this Association be raised from $1.00 to $2.00, for while the condition of our treasury is at present satisfactory, yet I think the change would work to the profit of the society, in giving the Executive Committee more funds, thus enabling them to secure more men of prominence as clinicians and essayists from a greater distance.

It would seem to be a wise change in the order of business to place the election of officers not later than the second day of the meeting, enabling the incoming president to appoint his various committees, and the committees to hold a meeting here and outline the programme, method of advertising, etc., for the ensuing year. In this way it would be possible to so apportion the work as to relieve the Chairmen of the various committees from doing the bulk of the work, as they have been compelled to do in the past.

While our progress as a society has up to the present been satisfactory, and we need have no fear of the diminution of our importance as a society, it would be wise, it would seem, to seek closer affiliation with the State Society, and I hope to see this very thoroughly discussed at this meeting.

In closing, I wish to both quote and paraphrase a portion of an address by Dr. Safford Perry, in which he said "The profession will move on in its destined way, broadening and deepening, and becoming more and more a great branch of the healing art. Its future was never as bright as to-day. There is no power in heaven or earth that can or will deflect or divert it. It is one of God's chosen ways for the betterment of mankind; it is childish to doubt its future, and all of this because it is not founded on shallow pretense, but upon a widespread, everlasting human need. If we fix our minds upon material advancement as the great object of life, there may not be overmuch to encourage us in the dentistry of to-day or even of to-morrow, but if we find joy in work well done, and in laboring for the good of humanity, our profession offers a field second to none in the whole range of human activity."

SUGGESTIONS

PREPARING PLATINUM FOR THE MATRIX.

In using platinum as a material for matrices, it is well to have it of at least two thicknesses — one the commercial, which is supposed to be 1-2000 of an inch in thickness. This can be annealed and oiled and folded together, and with a good set of rolls can be reduced to probably one-half its thickness, and is much better for small inlays than the thicker platinum. Various methods for annealing have been suggested. One very good way is, in the furnace, heating it up to two thousand degrees or more, then allowing it to cool gradually. Another very excellent way is the oxyhydrogen blowpipe, which heats it very rapidly and very hot, and is more convenient on account of saving of time, and the result is equally as good.

The platinum which has been doubled and passed through the rolls for the purpose of reducing the gauge is glazed on the surface which comes in contact with the steel roller, while the other side has a frosty or velvety surface. The frosted surface should be placed in contact with the tooth, the glazed side in contact with the porcelain, as it strips from the inlay more easily than the frosted side. — *Western Dental Journal.*

TO PREVENT NAUSEA IN IMPRESSION TAKING.

H. E. Davis, St. Joseph, Mo.

In prosthetic work, when your patient has a tender palate and is bothered with retching, to stay such trouble while taking an impression, paint on palate a 20 per cent solution of bromide of potassium with a camel's hair brush, or gargle 5 to 15 grs., or both. In extreme cases give 10 grs. at night, repeat after breakfast and again, one-half hour before impression is taken, give 10 to 15 grs. It greatly diminishes the sensibility of a tender palate.— *Dental Review.*

THE COLOR PROBLEM IN PORCELAIN INLAY MAKING.

J. Q. Byram, Indianapolis.

I believe the method of constructing inlays of two bodies differing in fusibility to be the correct one. The foundation body can be thoroughly fused, and when the enamel colors are placed in their respective locations and fused, the two porcelains give a more natural combination of color than can be produced by a single body.

Many porcelain workers prefer to apply each layer of enamel and thoroughly fuse the porcelain before the next layer is applied. But I prefer to apply each layer and fuse to a high biscuit, only heating the porcelain to the point of glazing at the final fusing. If a layer of porcelain is fused and then another layer of the same material is added and thoroughly fused, the first layer will be slightly over-fused. Hence, in the process of applying porcelain in layers and fusing each layer, the underlying layers will be slightly overfused and somewhat lighter in color.

In the selection of colors for an inlay note the variations in color of the natural tooth. There are usually three or more colors or shades of colors, in a tooth. The foundation of an inlay, representing the dentine, should be yellow (presuming that the tooth is vital), and the overlying colors should approach the color of the enamel in their respective positions. If the matrix lining is to be used, a thick layer should cover the matrix to within one-half millimeter of the margin and be fused to a high glaze. The foundation body should be applied over the white porcelain and be contoured to replace the dentine. It should be fused, provided it is of a higher fusing porcelain than that used to replace enamel. Care should be taken to prevent porcelain of different colors from mixing when applying them to their respective position. If the colors are applied separately and biscuited, then a uniform color is applied over the entire mass and properly fused; the colors will be true and the fused porcelain will approach more nearly the natural tooth structure in appearance.

The uniformity of color in porcelain is dependent upon the accuracy of the fusing. It is difficult to fuse porcelain at a definite degree of heat without some means of measuring the degree of heat used. Many otherwise good inlays are spoiled in the furnace. Then, too, variations of the heat of the muffle will cause differences in the shade and the strength of the porcelain.

Under-fused porcelain is of a duller hue and is less translucent, while over-fused porcelain is lighter and has more of a glass-like appearance.

Because of the opacity of low fusing porcelain it is impossible to construct inlays of this material for teeth of extreme translucency that will match as well as inlays constructed of high fusing porcelain. But the low fusing porcelain more nearly imitates the color of the natural teeth in cavities on the labial surfaces, because the opaque porcelains absorb and reflect light from the surface, thus causing less change by the cement. — *Dental Review.*

NEW PROCESS IN CROWN MAKING.

H. Herbert Johnson, Macon, Ga.

In preparing the root for the reception of this crown it is advisable to leave as much of the palatal portion of the root as the conditions presenting will allow, cutting it very low in front, even a little below the gum margin. Of course, the remaining enamel must be removed on the palatal side. The canal having been enlarged and a piece of iridio-platinum wire of suitable size and depth adjusted therein, a piece of 24-k. gold rolled very thin, slightly thinner than No. 36 gauge, is next selected with which to form the half-cap for the root. This piece of gold is cut wider than the greatest width of the root and considerably longer than the length of the face of the root from before backward, so that when the previously prepared piece of iridio-platinum wire is passed through and soldered, polished at the anterior third of the surface of the root sufficiently to indicate the exact margin, the piece removed, and all surplus cut away at this point, so that there should be no overlapping but just enough of the gold to cover exactly that portion of the face of the root to its margin.

The approximal sides of the disk are next burnished to these surfaces and also to the extreme palatal portion, with the view of obtaining the half-cap. This burnishing will form some creases or ears at the two approximo-palatal points of the root. With a pair of pliers these creases are drawn tightly together. These flaps or creases are then burnished down right and left into close adaptation to the respective surfaces of the root; in fact, all the surfaces are now burnished carefully. On account of the thinness and pliability of the gold used, these laps can be burnished out completely, and the lapping is not objectionable.

The formed half-cap is now carefully removed, taking care to prevent a change of shape, and is painted inside with a solution of chalk mixture to prevent the solder from flowing through, and thickened and strengthened by flowing 22-k. gold solder all over the outer surface.

This completes the formation of the cap, and the remaining steps are the same as in the making of any porcelain-face crown. The cap is placed on the root, a bite and impression is taken, a model is run, and after placing the whole in a crown articulator a facing is selected, ground, backed and waxed to the cap now on the model. The cap and facing are now united with solder, and the crown finished.

The claims made for the process are — Strength where needed to bear the strain of the outward force of biting; a cap accurately adapted and adjusted so that only a minimum amount of irritation, if any, will ever arise to cause after trouble. I may say that very thin platinum may also be used instead of the thin gold, where for any reason it may be preferred.

The value of this burnishing method in crown adjustment is very apparent, and it can be varied to suit nearly all cases. The promise of permanence and durability which attends the operation of cementing porcelain inlays, and all work of like character where the interstices to be filled are reduced to the minimum, will lend additional encouragement to this class of crown work. In the future I feel sure that some such methods will be employed entirely, to the exclusion of all irritating bands. — *Cosmos.*

SENSITIVE DENTINE TREATMENT.

George Gow.

Of the sprays "Ethyl Chloride" is the one most universally used, and the results as a rule are very gratifying to both patient and operator.

To one who uses it carefully its range of usefulness is very large, the results being more successful as its management is better understood. It is by no means painless in its application, and care must be exercised in its use, otherwise great harm may ensue. As it is to be employed only on the tooth in question, the operator must be at some trouble to confine the action to the desired locality, and keep it away from the lips or cheeks. The use of the rubber dam is, of course, a great assistance.

Its action is rendered appreciably less painful if a blast of cool air is first directed against the tooth, thus making less the sudden change from a normal temperature to an extreme of cold.

A pledget of cotton saturated with the liquid should be gently brought into contact with the tooth or cavity, and then removed. This is repeated frequently until as the refrigeration extends, the cotton may be left on the tooth without excessive pain to the patient.

The tooth may now be sprayed direct until completely benumbed without causing much discomfort. The finer the spray, the better the action, and the less painful the application.

When the tooth is thus ready for operating upon, a piece of cotton, soaked with the liquid, should be held against the tooth while the cavity is being cut, as this maintains the state of anesthesia longer than if not used. The spray may be repeated at intervals until the necessary cutting is accomplished.

Some patients experience no pain at all, even in the early stages of its application, while inevitably, sooner or later, there will be found some who suffer to such an extent that it would be unwise to pursue the treatment to a finish. If properly used this method leaves no bad after-effects, but if an excessive amount of the liquid be used, as is common where the spray is not fine, severe soreness and pulpitis may ensue, lasting for some considerable time. — *Dominion Dental Journal.*

A NEW METHOD OF MAKING A PORCELAIN FACED CROWN.

D. H. Young, Attica, N. Y.

In presenting this crown to you I wish simply to call attention mainly to the points which differ from those of other crowns, especially to these points in which it differs from the crown known to us all as the Richmond, because when completed it, at first sight, more closely resembles that particular crown than it does any other. These differences consist in the method of making as well as in the different qualities the crown possesses when completed.

For convenience we will take as the one to be described a superior central incisor.

Since the pin of the crown is its main anchorage and support, it is therefore a very important part of the foundation and furnishes a good place to begin the construction of the crown.

Pins of crowns in general, so far as I am acquainted with them, are placed about in the center of the roots, but in this particular crown, that portion of the pin which protrudes from the root, is placed about one-thirty-second of an inch nearer the lingual than the labial side of the root. This change gives two desired qualities; it leaves more room and freedom in placing the facing just where you wish to have it; it also permits of using a thicker facing if desired.

We usually look to the foundation of any structure for its strength and stability and in the arrangement of the pin just described I believe we will obtain these very desirable qualities. In the natural bite the force is exerted upon the lingual surface of the upper front teeth, upward and toward the labial side and you will readily see that this portion of the pin lengthens the load arm of the lever — the tooth and its anchorage being analogous to one form of lever — and therefore makes it more difficult to be displaced.

The next point of difference is in the completing of the crown without subjecting the facing to the heat while soldering. In order to effect this the model is taken with the cap and pin in the desired position; the facing is ground to fit the space and the back surface is leveled on the cutting edge at quite an acute angle. This will leave more room for solder; hence greater strength is gained. Next the backing material is placed upon the facing and swedged or burnished to fit perfectly, the backing being allowed to remain flush at the cutting edge so as to give a surplus needed in finishing. The backing is then carefully removed so as not to distort it, and the surface that comes in contact with the facing is painted with whiting and sufficient solder is placed upon the cutting edge and flowed to raise it to the desired fulness, this fulness, of course, depending upon the bite. After this the backing is placed upon the facing and both are put in the desired position upon the model; a little wax is flowed from the edges of the backing to the adjoining teeth, care being taken not to get any wax on the pins. This will hold it in perfect position.

The facing is then removed, a little more whiting is flowed over the pin holes to keep the wax from coming through, and then as much wax is added to the other side as you desire solder in the finishing crown, but do not let the wax cover the cutting edge which already has sufficient solder.

By the aid of a small drill the wax is bored out of the pin-holes. In order to prevent the solder from filling up the pin-holes, small carbons, which can be made from a hard lead pencil, are placed in the pin-holes from the labial surface, allowing them to extend into the wax about one-sixteenth of an inch or not so far as to prevent the solder from flowing over their ends and giving the complete contour. A second coat of whiting is usually added at this point, covering the carbons and sealing the joints around them, thus preventing any solder from coming through.

Now the case is ready to be invested, which may be done in the ordinary way.

By slightly heating the wax it can be removed without disturbing the position of the backing. As there is no facing to break it may be heated up as rapidly as desired, and when the solder is flowed, without waiting for it to cool, it may be dipped in cold water and separated in a jiffy. With the aid of a spear point drill the carbons and the solder which cover their ends are drilled out.

With a fissure burr held at an angle of forty-five degrees each hole is cut toward its neighbor to allow the pins to bend toward each other. A slight film of cement, light or dark as you may wish to influence the shade of the facing, is put on the occluding surfaces and the facing is pressed into place. The pins are then bent toward each other into the slots made for them and the excess cut off. Bore out the openings left at the outer side of each pin by placing a drill in them at the same angle at which the pin is bent and drill to the distance of a thirty-second of an inch. Then with a small retention bur make this little cavity retentive by slightly notching the pin on one side and the gold on the other, fill this cavity with a pledget of gold, or amalgam may be used, and you have a facing that is cemented, clenched and keyed.

Finish it off and you are positive that you have a crown with a perfect facing, and with better joints, I believe, than it is possible to obtain by running the facing through the fire. You are also sure that the color has not been changed in the fire; that the crown is a sanitary one, for if in any way there should be any space between the facing and the backing which would absorb nitrogenous material of the mouth, to become putrid afterward, such spaces have been occupied by the cement. The cement also forms a perfect bed for the facing to rest upon alike at all points, and thus it is free from any strain caused by expansion and contraction. A strain which by the ordinary method, I believe to be often within a few pounds of the breaking point.

In making a crown by this method there is no necessity for any gold to come into view where there is a normal contour of the gum, and thereby the cosmetic qualities of the natural tooth are gained, and yet you have the added strength of the gold at all points needed.

This method of attaching the facing works equally well in bridge-work, and I have adopted it entirely in the construction of bridges. — *Items of Interest.*

PRACTICAL USE OF COMPRESSED AIR.

George Zederbaum.

Practical use of compressed air is the constant blowing out of chips while excavating and drilling cavities. I often invite my patient's co-operation and he will not only keep the field of operation dry, but will also have it clear of all chips and debris and will minimize his pain by having his mind on his share of the work.

Along with the scalers I employ the compressed air for two purposes:

First, with a fair degree of pressure directed into the embrasures and about the necks of teeth I am better enabled to see the location of calcareous and other deposits; and when you can see, you don't have to feel and hunt for them.

Secondly, after scaling, by means of the compressed air nozzle attached to a common atomizer, you can spray the gums rootward as deeply as needed, even to the bottom of pyorrheal pockets. Either a dry or a liquid medicament works perfectly. In treatments of antral empyema, or wounds from root excision or extraction, you can force medication to the deepest portions and do more good and in a shorter period than by the old methods. One can easily control a secondary hemorrhage by spraying emptied root sockets with Adrenalin solution with a fair degree of pressure. Powdered styptics can also be used in a similar manner.

In setting crowns and bridges, we ought to have absolute dryness, and we can have it with the compressed air apparatus. Furthermore, I will say, that after the pressure has been used a few minutes, it will not only dry the abutments and piers, but actually numb the gum tissue and lessen the pain incidental to placing shell crowns. I have tried the air on my own mouth and found this to be true to a great extent. Did you ever attempt to set a lower bridge, when the saliva completely covered the abutments? Did your bridge work stay? With the compressed air properly used, you need not anticipate another loose piece of work to re-cement within a day or so. — *Dental Register.*

THE HALF-COLLAR CROWN.

R. M. Sanger, East Orange, N. J.

I devised a half-collar crown embodying some probable advantages over the full-banded crown, constructed with No. 32-gauge gold and I think having some advantages over this crown in the ease of making and the ease of adaptation. In my opinion the half-collar crown properly constructed and made has advantages over the full-collar crown in its esthetic points — the concealment of the gold which to my mind is a decided advantage — while I think the half-collar properly fitted will give all the strength that the full collar crown will give. I think our error in using the full-collar crown is in attempting to make the collars too deep. It is a mistake in my opinion to suppose that a collar of one-thirty-second of an inch in width is not as strong as the collar one-sixteenth of an inch in width. If the band encircles the root, I do not think the depth is essential, providing it goes far enough under the gum to give it the proper hold. It is in my opinion a mistake to think that the deeper the collar the better the crown will be. Again, the half-collar crown has an advantage in bridge attachments in that it gives an esthetic effect. It gives the same appearance as the all-porcelain crown, and at the same time it has a gold back to which other teeth can be attached. This cannot be done so readily with the porcelain crown unless it be in the case of an all-porcelain bridge. — *Dental Cosmos.*

ALVEOLAR ABSCESS SYMPTOMS.

G. V. Black, Chicago.

Every case of alveolar abscess begins with an inflammation of the apical portion of the peridental membrane following immediately or more or less remotely the death of the pulp of a tooth.

If acute, there is severe pain and soreness of the tooth. In most cases this is accompanied by a lymphangitis in which the lymphatic glands of the floor of the mouth, the submaxilliary lymph glands and those of the angles of the neck are more or less involved. Generally pus forms about the apex of the tooth promptly and more or less absorption of bone in the immediate neighborhood takes place quickly. During this process a sharp rise of temperature occurs, often preceded in the severe cases by a chill. The severity of these symptoms gives indications of the probable vile results that are to follow. It is well at this time, if the symptoms are severe, to look carefully to the general condition of the patient, particularly to see that the circulation is good and that the alimentary tract is in good condition. When there is considerable severity the bowels should be cleared with saline cathartic or some form of catharsis which gives large, watery stools. A fever of more than 103 degrees betokens danger in some direction and 105 degrees or 106 degrees bcomes in itself dangerous unless its duration be very short. — *Northwestern Dental Journal.*

HOW TO TAKE A BITE THAT MUST BE CORRECT.

Richard Kessel, Buffalo, N. Y.

Nervous people are unable to close their teeth twice alike. If you wish to articulate a gold crown only it is hard to have the patient articulate correctly. In full dentures it is almost impossible to get the right bite, as most patients will throw their lower jaw forward.

My way of taking the bite is as follows: Put your patient in a comfortable position just as when you wish to converse with him. Prepare a trial plate in ordinary manner with a piece of warm wax upon it. At the heel of the plate put a clutch made of wax. Tell your patient to put the tip of the tongue within this clutch and close the lips. The patient is unable to throw the lower jaw forward or sideways. The reason I ask them to close the lips is because, when a patient needs a full upper and lower set of artificial teeth they have no teeth to close, and by closing their lips they are not so apt to protrude the lower jaw in case they lift the tongue out of the cluch. — *Items of Interest.*

EDITORIAL

BETTER SOCIETY ORGANIZATION.

With the rapidly increasing numbers in the dental profession and the small percentage of members in our dental societies, it would seem that better organization were needful.

A year ago Dr. Stephan, president of the Ohio State Society, made a plea for better organization in Ohio, and this request was again urged in the address of the president, Dr. Ruggles, at the last meeting of the state society, but no steps have been taken as yet in this direction. In this issue we publish both papers, and desire to again call the attention of society members and dentists in general to the subject of better organization in this and other states. At their recent meeting the Missouri State Dental Society took steps toward organizing societies throughout the state. Illinois two years ago effected a thorough organization of society work in the state, and the membership in the state dental society increased from 274 to some 1,400 members, and they are satisfied that it has helped dentistry in that state.

Could their plan be adopted by all state societies, and as successfully carried out, who can estimate the benefit the profession would derive?

The plan is on lines similar to those carried out by the Illinois State Medical Society, and briefly stated is as follows: All existing local societies and any additional local societies organized are made component parts of the state society. As each county or district is organized, the state society recognizes the county society as its representative, and a practitioner can become a member of the state society only by being elected a member of a county society. All members of the county organizations become members of the state society. Each member of the county societies pays dues covering the membership of both the county and state societies to the county society, and the secretary of each county society forwards to the secretary of the state society the state society's share of the dues paid by each member.

By this plan the men of each county organization pass on the qualifications of applicants to both their own and the state society, and if at any time a man is dropped from membership by his county society he is at the same time dropped from the state society.

Under this plan the Illinois State Medical Society now has five thousand members out of eleven thousand practitioners in the state.

A few years ago the Ohio legislature voted down a much-needed new dental law because it emanated from the Ohio State Dental Society, which had then only about two hundred members, while the dentists in the state numbered some three thousand. Two years ago dental legislation in Illinois was defeated on the same plea, but this last year, when the Illinois State Dental Society could show twelve or fourteen hundred members out of some twenty-five hundred or three thousand dentists in the state, there was no veto by the governor, and the law was passed.

It is said that not more than ten per cent. of the members of the dental profession belong to dental societies. If there is virtue in dental societies they are certainly worthy of large membership.

The object of a state society should be to best further the interests of dentistry in that state, and it would seem that this can be more thoroughly done by interesting as many of the reputable practitioners as possible. When a man becomes a member of an ethical dental society he feels a moral obligation to be professional; it is a stimulus to him to attend its meetings, and this makes a better dentist of him. It stimulates him in his work and increases his interest in dentistry and the profession; and the more dentists of this sort in any state, the better for dentistry in that state.

◆

CORRESPONDENCE

PICTURES WANTED.

Dear Dr. Bethel—I accept your kind offer to print in The Summary a list of those dentists who were in Cleveland in 1857 at the first meeting of the Northern Ohio Dental Association, whose pictures I want.

Pictures will be returned soon as copied. Addresses are given as they appeared in 1857 and the pictures will be printed in the history of the society.

E. Merritt, Cleveland.
T. McCune, Cleveland.
J. G. Moore, Cleveland or Painesville.
E. G. Burger, Cleveland.
J. G. Rockwell, Cleveland.
L. T. Fox, Madison.
W. F. Robinson, Youngstown.
C. P. Bailey, Cuyahoga Falls.

Yours truly,

H. L. AMBLER,
Central Trust Bldg., Cleveland, O.

AFTERMATH

Loss by Fire.—A fire in the dental office of Dr. C. F. Stewart, June 8, resulted in a loss of $300.

Dr. Calvin S. Case wishes to announce the removal of his office from the seventh to the eleventh floor of the Stewart Building, 92 State Street, Chicago, Suite 1120.

Dentist's Home Damaged by Lightning.—The home of Dr. T. R. Allen, in South Knoxville, Tenn., was struck by lightning June 24, and damaged to the amount of $500.

New Dean for Medico-Chirurgical College.—Dr. I. N. Broomell is now the dean of the dental department, Medico-Chirurgical College, Philadelphia, succeeding Dr. R. H. Nones.

McLean County Dental Society of Illinois.—At a meeting held in June the following officers for the ensuing year were elected: President, J. W. Kasbeer; vice-president, O. J. Jarett; secretary, S. S. Powers; treasurer, J. G. Beesley.

Idaho State Dental Society.—At the ninth annual meeting held in June the following officers for the ensuing year were elected: President, Dr. K. C. Jayner, Nampa; vice-president, W. C. Minier, Boise; secretary, Dr. A. A. Jessup, of Boise; treasurer, Dr. W. Cate, of Boise.

Southern Wisconsin Dental Association.—At a meeting held in June the folowing officers for the ensuing year were elected: President, C. F. Rodolf, Muscoda; first vice-president, B. C. Campbell, of Lake Geneva; second vice-president, E. H. Weber, of Lake Wills; secretary, C. W. Coliver, of Clinton; treasurer, W. G. Hales, of Mineral Point.

Dr. L. P. Bethel Severs His Connection with Ohio Medical University.—Dr. L. P. Bethel, for the past five years dean of the dental department, Ohio Medical University, Columbus, O., has severed his connection with that college and will devote the time to his orthodontia practice. Dr. Bethel has been engaged in dental college teaching for the past fourteen years.

Minnesota State Dental Society.—At a meeting held in June the following officers for the ensuing year were elected: President, R. W. Berthel, St. Paul; vice-president, Dr. H. C. Rosinger; St. Peter; secretary, Dr. F. E. Cobb, of Minneapolis, and treasurer, Dr. H. M. Reed, of Minneapolis. Drs. T. R. Holden and M. F. Lowe were appointed to represent the society on the state board of dental examiners.

Cautions Against the Use of Adrenalin.—M. I. Wilbert, in American Journal of Pharmacy: Neugebauer reports that he has seen several cases of localized gangrene following the use of solutions to which adrenalin had been added for the infiltration method of local anesthesia. Elderly persons were especially liable to this, and he therefore cautions against the use of adrenalin in old persons.—Dental Brief.

South Dakota Dental Society.—At a meeting held in June the following officers for the ensuing year were elected: President, Dr. E. S. O'Neill, Canton; vice-president, Dr. A. D. Donahue, Sioux Falls; secretary, Dr. Ferdinand Brown, Sioux Falls; treasurer, Dr. J. W. Smoots, Beresford; librarian, Dr. C. W. Stutenroth, Watertown, and Drs. C. W. Collins, of Vermilion, and E. H. Wilson, of Miller, candidates for the state board.

Utah Dental Association.—At a meeting held in June the following officers for the ensuing year were elected: Dr. Fred Meakin, Salt Lake, president; Dr. J. F. Snedaker, Ogden, first vice-president; Dr. Joseph H. Grant, Kaysville, second vice-president; Dr. J. A. Anderson, Salt Lake, secretary and treasurer. Board of censors: Dr. George Ellerbeck, Salt Lake, chairman; Dr. H. K. Webber, Salt Lake, and Dr. A. B. Dunford, Salt Lake.

Texas State Dental Association.—At a meeting held in June the following officers for the ensuing year were elected: President, Dr. R. D. Griffis of Paris; first vice-president, Dr. A. A. Dyer of Galveston; second vice-president, Dr. Charles H. Edge of Houston; secretary and treasurer, Dr. G. Waller Staples of Dallas; curator of museum, Dr. A. F. Sonntag, of Waco. Executive committee: Dr. Charles L. Watson, Mexia; D. J. W. Combs, New Braunfels.

Indiana State Dental Association.—At a meeting held in June the following officers for the ensuing year were elected: President, A. T. White, New Castle; vice-president, R. A. Adams, Clinton; secretary, C. D. Lucas, Indianapolis; treasurer, C. W. Throop, Muncie. Executive committee. P. H. Chadwick, Rushville; supervisor of clinics, C. A. Barnhill, Indianapolis; trustees, S. W. Van Osdol, Mitchell; O. U. King, Huntington, and B. F. Williams, Terre Haute.

Dentist Loses an Eye from Tooth Infection.—Dr. Richards of Glamorganshire, England, extracted a child's tooth and held it up by forceps to show to the mother. A piece splintered off the tooth and struck the doctor's eye. A day or so afterward there were pains in the eye. On examination it was found that a small wound had been inflicted, and, owing to the splinter being decayed, the eye was poisoned. The eye had to be removed, its sight having completely gone.

Marriages.—Dr. G. W. Maxwell, of Reading, Pa., was married to Miss Frances V. Kurtz on Thursday evening, June 28. Clarence N. Trout, a dentist of York, Pa., was married to Miss Mary Bingham, of near Gettysburg, June 20. Dr. G. W. Tarr, of St. Louis, and Miss Stella Edelin, of Alton, were married June 6 at Alton; Dr. Guy Dillon, a dentist of Detroit, Mich., was married June 13 to Miss Etta Fleischer, of Normal, Ill. Dr. H. S. Srigley and Miss Jennie E. Sprague, of Athens, O., were married June 27th.

Georgia State Dental Society.—At a meeting held in June the following officers for the ensuing year were elected: President, William Crenshaw, of Atlanta; first vice-president, T. C. Gibson, of Forsyth; second vice-president, C. P. Davis, of Americus; corresponding secretary, J. H. McNeil, of Athens; recording secretary, Delos Hill, of Atlanta; treasurer, H. R. Jewett, of Atlanta; journal editor, H. H. Johnson, of Macon; executive committee, W. C. Miller, of Augusta; W. E. Bugg, of Madison; W. M. Seirkle, of Atlanta; E. A. Tigner, of Milledgeville; R. Holmes, of Macon; H. H. Johnson, of Macon.

Dentists Losers in Waco Fire.—The office of Drs. Clifton and Bray located in the Provident building at Waco, Tex., together with other offices in that building, was destroyed by fire June 19.

Forty-five Thousand Dollars to Assist Physicians and Dentists.—Shortly after the fire H. E. Huntington's four railroad companies in Southern California each gave $10,000 as a fund to be used in assisting needy and deserving professional men in San Francisco to make a fresh start. Several additional contributions to the fund were received until it now amounts to $45,000. W. F. Herrin, Chief Surgeon Frank K. Ainsworth, of the Southern Pacific, and Supreme Justice Henshaw are the trustees of the fund.

A Fish Story.—Fishing is a favorite sport among dentists, and occasionally they have to stand the brunt of others' yarns. The Alpena, Mich., papers are telling this story on Dr. Godfrey, of Alpena, Mich. The doctor is a famous fisherman, and he always catches the biggest fish—trout, bass and pike. And he can prove it, because he always carries a handsome pair of silver-plated scales in his creel, and weighs the trout or bass or pike as soon as caught. A well-known Washington avenue man recently became the daddy of a bouncing baby boy. Having no scales in the house, he went over to

Dr. Godfrey's to borrow a pair. The doctor, without thinking, loaned the scales he weighs his fish on. When the baby was weighed on the doctor's scales it was ascertained that the little fellow, only a few hours old, weighed strong 37 pounds.

Deaths.—Dr. Hiram F. Dickson, of Sharon, Pa., died June 14, at Cambridge Springs. He was 58 years old. Dr. Allen B. Snyder, formerly of Ft. Wayne, Ind., died June 23, at Pasadena, Cal. He was 47 years old. Dr. John W. Richards, of New York, died at his home there, June 7. The body of Dr. Caldwell, dentist, was found floating in the Ohio river, where he had fallen from the steamer Ruth, June 6. Dr. Albert Fickessen, a dentist who lived in New Orleans, died June 27, from strychnine poison. He unintentionally took an overdose of the drug, which he was using to stimulate his heart. He was 52 years old. Dr. Thomas S. Ryder, a Manhattan dentist, died June 19, aged 78 years. Dr. Hyman Roosa, a dentist of Kingston, died there June 8. He was 58 years old. Dr. P. L. Reynolds, of Amsterdam, N. Y., died Sunday, June 10, at the age of 82 years. Dr. Gorge B. Salter, of Chicago, dropped dead from apoplexy, June 30. He was 68 years old.

Instruction in Oral Hygiene and Prophylaxis.—Inasmuch as the purpose of dental science is to put into operation the laws of oral hygiene, and remembering that many practitioners of dentistry, as well as the general public, are unversed in the science of prophylaxis, Dr. J. P. Corley, chairman of the National Dental Association's commitee on oral hygiene, requests that each state association create a standing committee on oral hygiene, whose duty it shall be to promote the cause among the members of the profession, and through them to educate the public. He desires, further, that these state committees shall constitute a sub-committee to co-operate with the committee from the national in their effort to establish the fact that oral hygiene is the very basis of dental protection. He also requests that every state examining board give a practical and theoretical examination on oral hygiene and dental prophylaxis, and that the dental colleges put in a professorship, or at least a lectureship, on the subject.

Missouri State Dental Association.—The forty-first annual meeting of the Missouri State Dental Association was held June 5-6-7 at Springfield, Mo. An important feature of the meeting was the adoption of a plan for organizing societies throughout the state. The following officers and committees were elected: President, F. G. Worthley, Kansas City; first vice-president, J. W. Hull, Kansas City; second vice-president, J. B. McBride, Springfield; recording secretary, H. H. Sullivan, Kansas City; corresponding secretary, E. P. Dameron, St. Louis; treasurer, J. T. Fry, Moberly. Board of censors: J. L. Bridgeford, Springfield; H. Boatner, Boliver. Committee on Ethics: A. M. Tutt, Liberty; J. F. Austin, St. Louis; F. W. Franklin, Kansas City. Committee on Publication: Otto J. Fruth,

t. Louis; H. F. D'Oench, St. Louis. Committee on new appliances: J. B. McMillen, Kansas City. Committee on history: B. L. Thorpe, St. Louis. Committee on by-laws: J. W. Hull, Kansas City; H. H. Sullivan, Kansas City; J. D. Patterson, Kansas City. The forty-second annual meeting will be held in Kansas City.

Burglaries.—The office of Dr. William Morris, of Manitowac, Wis., was entered and robbed of gold solder and leaf valued at $20. The office of Dr. F. L. Cary, of Zanesville, O., was robbed of about $50 worth of filling material. The office of Dr. T. E. Howson of Saginaw, Mich., was entered and a quantity of gold filling stolen. Dr. Ashton's office in Bay City, Mich., was raided, the burglars taking $40 worth of gold and a shotgun valued at $200. Robbers securd $15 in money and $75 worth of gold in Dr. Deleughani's office at Manitowac, Wis. Burglars took $100 worth of gold from the dental parlors of Butler & Lovett at La Harne, Ill. The office of Drs. W. A. and A. B. Dorlan, of Grand Rapids, Mich., was roobed of nearly $500 worth of gold tooth-filling and bridge-work. In the same building the offices of Dr. S. E. Dodson and Dr. Rawson, dentists, were robbed. The offices of Dr. W. T. Sullivan at Kankana, Wis., was entered by burglars and jewelry to the extent of $200 was stolen. The office of Dr. J. H. Kennedy of Morrison, Ill., was entered and about $40 worth of gold stolen. The office of Dr. J. M. King was robbed of $300 worth of gold fillings, crowns, etc., by a courteous stranger who asked to purchase gold scraps. In like manner the office of Dr. E. T. Jones was robbed of $20. The office of Dr. Ralph Dixon of Whitewater, Wis., was robbed of $20 worth of gold and some bridges.

Prof. W. D. Miller to Become Dean of the Dental Department, University of Michigan.—As some of our readers may know from newspaper reports, Professor Miller will return to America, and has been called to the chair of dental histology and pathology in the University of Michigan, and to be the dean of the dental department This will be welcome news to his friends here and the friends of the University of Michigan. It is, however, a more significant matter for the entire profession. Dr. Miller, by his scientific researches, has placed himself in a position to command the confidence of scientific workers in the dental profession the world over, and he probably has the capacity for doing and directing scientific work in his special field possessed by few other men in our profession. The regents of the University of Michigan realize this fact and are preparing to make available the university resources and Professor Miller's knowledge and skill for the advancement of the scientific aspects of dentistry, not for the glory of their institution, but that the science of dentistry may at least keep pace with the immense strides being made in its technical or art features. The intention is to place under Professor Miller's direction the scientific education of such students as exhibit a capacity for such work, or such as promise to develop a capacity, and to establish a laboratory for research on dental subjects for all workers who may not have proper facilities in the way of instructors or equipment. It is hoped that his work shall so commend itself to the profession in general that students having a scientific desire and qualifications may be assisted in preparing themselves for teachers and scientific workers. There is undoubtedly great need for such a training school, and it should receive the cordial support of the entire profession, and we confidently expect it will.--Dental Register.

Unjust Criticism of Coal Tar Preparations.—Last December Collier's Weekly published a list of 22 supposed cases of death and serious illness from "headache powders," which, on investigation by the Proprietary Association of America were proven to have been mostly lies or gross exaggerations, states the St. Louis Medical and Surgical Journal. Only six of the said 22 cases were discovered to have been bona fide cases of poisoning, and nearly all of these were due to overdoses. No sane physician will condemn a drug or medicine because an **overdose** results unfavorably, for if we did we might better quit the practice of medicine than to treat patients with drugs so inert that overdoses will never do harm. Any drug or medicine which is safe if taken according to the directions on the package, is a safe remedy in the sense in which the word "safe" is used in medicine. After the exposure by the Proprietary Association of America of the mendacity of Collier's Weekly, said paper attempted to excuse itself on the ground that the cases were distinctly stated to be given upon the authority of the newspapers. From time to time apparently inspired reports of deaths or serious illness from the coal-tar pain relievers appear in the daily press, and investigations of these reports almost invariably show them to be absolutely without a basis of fact, or to have so little truth behind them as to prove beyond peradventure of a doubt that they are inspired by some one whose purpose it is to mislead regarding the safety of these remedies. The coal-tar derivatives appear to be the particular butt of attack by those who are creating the present epidemic of hysteria regarding these remedies and the most ridiculous and previously unheard of statements are made regarding them. Already bills have been introduced in several state legislatures classing all coal-tar derivatives as poisons, yet Collier's, assisted by the American Medical Association, was able to find only four bona fide cases of untoward effect resulting from overdoses of all the various coal-tar preparations sold in the United States and Canada. Yet there have been recorded over 100 cases of quinine blindness, numberless cases of quinine deafness, thousands of cases of skin lesions and other untoward results from small doses of quinine, not to say anything of the numerous deaths caused by it. And quinine is considered a safe remedy, and is not mentioned in the Schedule of Poisons referred to in the above mentioned bills. The coal-tar preparations are not poisons as that term is usually understood, and every person familiar with medical literature knows—though all may not publicly admit it—that there are more cases of poisoning by almost every other potent drug than by all the various coal-tar preparations combined. This, in spite of the fact that there are probably more doses of the coal-tar pain relievers taken every day than are taken of any other five drugs.

Recent Patents of Interest to Dentists:—

821150—Dental swaging apparatus, Frank L. Argall, San Jose, Cal.

821192—Set of artificial teeth, Carl Rauhe, Dusseldorf, Germany.

822582—Attachment for natural teeth and forming the same, John P. Carmichael, Milwaukee, Wis.

823150—Dental handpiece, Charles L. Alexander, Charlotte, N. C.

823167—Dental disk shield, Wm. F. Green, Modesto, Cal.

38079—Design, dental cabinet, Wm. G. Hullhorst, Toledo, Ohio.

Copies of above patents may be obtained for ten cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

DENTAL COLLEGE TEACHERS' CONTRIBUTIONS

ISOLATION OF WORK AREA.

BY H. M. SEMANS, A. M., D. D. S., COLUMBUS, OHIO.

Professor of Clinical Dentistry and Dental Anatomy, Ohio Medical University.

There is nothing in dentistry denoting more thoughtful consideration of patients' welfare than a consistent and persistent use of the rubber dam or the napkin, or a combination of the two. The operative procedure of most dentists plainly shows that if any thought is given upon the subject of comfort at all, it is comfort for themselves. Also do the majority manifest a hurried, careless habit of operative procedure against the exclusion of moisture, using the rubber dam, sad to relate, only when the cohesive gold must be protected. The idea of excluding moisture or isolating work area, except for cohesive gold alone, is never dreamed of, let alone attempted; consequently if the case is a hard one to manipulate under the dam, they then drop gold entirely out of consideration, and go on the supposition that everything else is of a submarine nature, and that moisture is an inconvenience, more than a detriment. If asked concerning napkining they look pityingly at you, talk of the blessings of the modern methods, and thank goodness for having been saved from ancient and obsolete ways of doing things.

The failure of isolation of working area and exclusion of moisture is nature inherent to all men who fail to make good in their work in dentistry, their counts not going up to the high marks. The setting of bridges, crowns and inlays, the placing of the plastics and other procedures are hurried through with, being, in fact, a flurried chase against wetness, sometimes relying upon a hunk of cotton stuffed methodless about the area of work. I have heard the argument made that amalgam can be placed under moisture upon the principle that two bodies cannot occupy the same place at the same time, and so by pressure, when all the amalgam is squeezed in, the moisture is squeezed out. If cement or gutta-percha is being used they consider them but makeshifts and temporary, so why bother? And as to isolating the work area while treating teeth, this to them is the very tip-top of foolish practice. Then, on the other hand, there are many others who are consistent to the use of the rubber dam in every case, wearing themselves out as well as their patients by their struggles with the elusive dam. To these latter let me say that skilful napkining, augmented by cotton rolls, gives such a cheerful aspect to our work that one feels that the very whiteness of these articles brightens and enlightens our work.

All filling material of every description should be placed after the application of the rubber dam, or else after carefully applied napkins and cotton rolls are in place. Often where the work is the cleaving away and the preparing of cavities in vital teeth, then we may wait, if we so desire, until everything is ready before we isolate our area. All crowns and bridges should by all means be set after their areas are isolated; so, also, does the treating of the interior portions of teeth come under this requirement wherever and whenever pulps and the canals are involved. The rubber dam, of course, is our great standby, and in isolating the work area, we should strive to obtain as large an area as possible, not try and see how few teeth we can isolate. If the work is upon a molar, don't be afraid of coming forward to the incisors; or if the incisors, don't be afraid of going to the bicuspids on each side; or even to the molars. However, as useful as the rubber dam is, it has its limitations. No need of going into explanation what these limitations are, but when we have these limitations realized, then napkining with the proper combination of cotton rolls should be resorted to. Let us suppose some area anterior to the third molar, or even including in some cases the third molar, in the superior portion of the mouth requires exclusion of moisture: With the rubber dam a failure, or of impossible use, a napkin six inches by eight inches, with the use of the rubber dam holder at each end will hug the chin and exclude the tongue from that area. Rubber dam clamps should then be placed upon the most advantageous posterior tooth at each side, the bows allowing a lopping back of the napkin. Then cover the mouth of Steno's duct with a roll of absorbent cotton, with a roll of non-absorbent cotton placed in front. You will now be agreeably surprised with what ease you have isolated a large working area with a very fair preservation of dryness, thus allowing the placing of crowns, bridges, inlays and the manipulation of the plastics. If the operation should be of long duration, new pieces of absorbent cotton may be applied over Steno's ducts. Weeping at the gingival borders of the teeth adjoining the working place can oftentimes be checked by placing little strands of cotton between the teeth, having sandarac contained in the cotton. If operations are desirous upon the lower teeth, and the rubber dam should be unavailable, thin pieces of absorbent cotton may be placed upon the sub-lingual ducts with sections of non-absorbent rolls parallel with the margin of the gum either side of the tooth or work area. Rubber dam clamps with the wide side flanges help very much to hold the rolls, but better yet are the cotton roll clamps made for this purpose.

There is a wide use for small napkins in many places about the mouth, and a very pleasing use is to hold one in the fingers while holding back the cheek or lip during operations in the posterior parts of the mouth. A dentist with a goodly supply of these articles, with absorbent and non-absorbent cotton rolls, finds no end to good uses he can put them to.

REGULAR CONTRIBUTIONS

METHOD OF RESETTING UPPER DENTURE WHEN THE BITE IS SATISFACTORY.

BY DR. J. D. ODENEAL, COLUMBUS, MISSISSIPPI.

I notice in Dental Summary method of re-setting upper denture when the bite is satisfactory, by Dr. F. H. Williams, Bloomville, O.

My method of obtaining same results, with considerably less work and loss of time is as follows: Wax the several parts of plate together accurately, and invest in lower half of flask, allowing plaster to come only to edge of rim of plate. After plaster hardens, soap plaster, rubber and teeth, and add more plaster on outside of plate only, allowing to come up even with occluding surface of teeth. When hard, soap, place balance of flask in place, fill up with plaster; when hard separate the two parts of flask, then gently lift up from heel the outer rim of plaster, and set in position, in upper part of flask. Warm lower half, remove plate, take off teeth and place in upper half, in position, and pack your case. You will find after vulcanizing very little work to be done.

PARTIAL IMPRESSIONS.

BY D. T. HILL, D. D. S., SYRACUSE, NEBRASKA.

Taking plaster as the only reliable material for any impression, and particularly for a partial, I adopted the plan of taking all partials, first in wax, using a perfectly flat cup, bringing the wax up between vacant spaces with the finger after the cup has been pressed to place; remove and chill the wax, then with a hot knife cut the entire labial and buccal wax away in front of or outside of any teeth; also cut the wax partly away where it laps the gum in vacant spaces from the side next the gum. Cut wax out where impression of all teeth is left, and then with an old excavator punch the wax full of indentations wherever plaster covers wax. Place plaster over wax, with the spatula drag plaster in the roof and carry cup to place, which will find its own way by reason of the wax. Remove as soon as plaster left in bowl will break with a clean fracture. The impression will break where the plaster drags. Save the pieces and replace in their respective positions on the wax; tack to place with hot wax, and a most perfect impression will be secured. Any material which will bind rather than break will not secure a perfect impression, therefore plaster is to be preferred. One flat cup for the upper and one for the lower will take most partial impressions.

THE MOUTH BEAUTIFUL.*

BY ALICE G. HARVIE, D. D. S., CONCORD, NEW HAMPSHIRE.

Side by side with the advancement of civilization, history has ever recorded an increasing love for, and appreciation of the beautiful. The most advanced nations have been those whose love of the beautiful was most highly developed.

The savage no sooner discovered the utility of a roof above his head and the benefits of clothing than he set about adorning them —crudely, at first—but ever with greater skill and finer feeling for the beautiful as his intellectual and moral life developed.

---

*Read before the New Hampshire State Dental Society, May, 1906.

Vessels of earthenware and metal, tools, weapons, indeed every class of manufactured articles have passed, among civilized races, from the rude state of mere utility to that in which beauty of construction assumes a greater or lesser part.

So in our own profession the day has passed (the uncivilized stage, I might call it), when the dentist was looked upon as a person useful to tear from the jaw an offending tooth, when the agonies of toothache made it necessary. Passing, too, is the stage in which people calmly await the complete loss of teeth from decay, before seeking a dentist to supply them with an artificial substitute.

We are now, for the greater part, in the third stage, the patching period, and very skillfully and artistically is this work of patching being done. No longer will the work of *mere utility* satisfy—that of removing a torturing member or supplying an artificial substitute to make possible the mastication of food; but the artistic work is demanded, and we find the most civilized, or perhaps I ought to say the most intellectual and cultured people, requiring of their dentists that the work done for them shall leave their mouths as nearly as possible as perfect as nature intended they should be. This is their idea of the beautiful—and rightly so.

Who among us will contend that the most skillful of artificial substitutes is more beautiful than nature in its highest state of perfection?

As we glance backward over the past decade, it would seem that greater progress has been made in dentistry than in any similar period—especially in this art of combining the beautiful with the useful. Crowns and bridges have reached a state of perfection which the older practitioners never dreamed of; for example, the carved porcelain crown, baked in the electric furnace, built up by degrees, and thus given a contour and natural shading impossible of attainment in any other way. From an aesthetic standpoint, could anything in the line of restitution be better than the skillfully made porcelain inlay?

The use of amalgam is more thoroughly understood—and with it most beautiful operations are now being done—although gold still is, and probably ever will be, the most satisfactory material for carrying on the work of restoration.

Gold inlays are at the present time engaging our attention, and appear admirable for the restoration of a surface which may receive an immense amount of wear and tear. Interchangeable or removable facings have been brought recently to our notice, and it would seem as if they were going to fill a long-felt want in this work of patching.

Orthodontia is a comparatively recent move in dental science; but so comprehensive a subject is it, so numerous and important are the theories and problems it involves, that at the present time I can do no more than mention it in connection with the work of beautifying the mouth.

With all that has been done in the line of restoration, we may sometimes wonder what can be left for the next generation to develop.

Our own observations and the desire of our patients supply the answer. So anxious are the latter to retain their teeth in as nearly a perfect condition as nature intended they should be, that, acting on our advise and their own intelligence, they come to have cavities filled in their earliest stages, realizing that this means a saving to themselves of both pain and expense. Some will even present themselves regularly twice a year, or oftener, to have examinations made for the beginning of caries.

We are now face to face with the question, Can we go one step farther and render these patients the service of preventing caries altogether? It has been most emphatically answered in the affirmative by Dr. D. D. Smith, of Philadelphia, the demonstrator of prophylaxis. I have yet to hear anyone who has intelligently and conscientiously followed in his footsteps say that he is mistaken. In Dr. Smith's work behold the *new* and the *true* departure in the science of dentistry.

Shall I startle you if I say that all our energies in the past have been directed along false lines? that all we have offered our patients has simply been a "next best"?—a sort of crutch to get along with, for a longer or shorter time, according to the quality of the work. All operative work has its limitations; all restoration is simply to tide over for a time. It is a cause for the keenest regret that we should so far have missed the goal.

Shall I startle you still more when I say that by this treatment fully 90 per cent. of decay can be eliminated, and that under ordinary conditions all decay can be arrested? To go farther, I would say that it is in our power, not only to prevent caries, but also diseases in and through the mouth.

The name for this treatment, "prophylaxis," is not always thoroughly understood. It must be carefully distinguished from the word "prophylactic," which, as an adjective, means *preventing disease,* and as a noun means *anything used as a medicine which defends against disease.* Prophylaxis is defined by the Standard Dictionary as "preservative or preventive *treatment* for disease, especially a particular form of disease in an individual."

Dr. Smith says: "Prophylaxis is an art or surgical treatment involving manipulative effort, as distinguished from the administration of a systemic or a therapeutic remedy." Hence, it implies surgical instrumentation or treatment of the mouth and teeth, in contradistinction to a germicide, a wash, or any form of medication for the prevention of disease in the oral cavity.

My introduction to this work was brought about while spending a winter in the office of Dr. E. S. Gaylord, of New Haven, Conn. Dr. Gaylord is an ardent disciple of Dr. D. D. Smith, of Philadelphia, the father of prophylaxis. From the beginning I was deeply impressed with the work, and later I was amazed by its possibilities. My next opportunity came when the master himself sent me an invitation to come to his office and see for myself. (I may say here that Dr. Smith occasionally gives these clinics and exhibitions, and that dentists come from various parts of the earth to enjoy this privilege).

Gratefully availing myself of the honor and privilege extended, I, along with five other practitioners, went to Philadelphia, and sat at the feet of the master for the greater part of two days. During that time I saw upwards of 40 of the most beautiful mouths I have ever looked upon—dreams of loveliness, at which we simply marveled. First, there were the children who presented mouth conditions which were a joy to behold. These children had never known the ills of caries or toothache; their teeth glistened; the gums were of a lovely pink hue; the whole mouth was radiant.

Then there were the older persons: Their mouths had been patched up by Dr. Smith, as, unfortunately, they had not come under the munificent benefits of prophylaxis sufficiently early to enjoy prevention in its fullest degree. After the patching, however, they were placed on the prophylaxis list, and there was no more patching to do. They, as well as the children, exhibited a beauty of mouth that is difficult to imagine, without having seen with one's own eyes. As with the children, the teeth had taken on that beautiful translucent appearance which prophylaxis confers; the gums were of a lovely pink hue, with festoons which would have delighted the eye of any critic; they were hard and dense—proof against bleeding from even the harshest treatment. I wish all here might have shared in our pleasure.

The gratitude of Dr. Smith's patients is no small factor in his work. They testified to us of the many ills of which they had been cured as a result of his systematic prophylaxis. In a number of cases stomach troubles had entirely disappeared; in others, sore-throat, troublesome for years, was a thing of the past. I cannot tell you of all the wonderful results obtained, and for which the patients were most sincerely grateful.

We were profoundly impressed by all we had seen, for we had looked in upon a new world in dentistry—one of boundless possibilities. We came away with the desire—no, the *resolve*—that henceforth our work should be that of conserving. I have kept my resolve. For a full year prophylaxis has dominated all else in my practice, and as a result, even in this short time, I am having mouths "to blossom as the rose," in response to this treatment.

To my infinite gratification (like Dr. Smith), I find stomach troubles, throat troubles, and other ailments cease to annoy. Pyorrhea and all its concomitants disappear, and the breath of a prophylaxis patient is pure and sweet, the gums are hard, every vestige of a tendency to bleed from hard brushing has passed away. As a patient remarked to me recently, "I can brush and scrub and do what I like, but my gums won't bleed for me."

My work is a continual joy, both to the patients and myself, a continual revelation of delight, and I ask you, Do I not render my patients an infinitely greater service in thus preserving an unbroken surface of enamel than by calmly waiting—nay, almost looking forward expectantly—to caries, and then offering the miserable substitute of a patch?

Regarding the method of this prophylaxis, it consists of seeing my patients regularly once a month (perhaps even oftener at first), for at least ten months of the year. These sittings are looked forward to with pleasure by both patient and operator. All dread of the operating chair has disappeared. I have had children come in to ask if it were not yet time for treatment.

The technique of this treatment consists of a thorough removal of all deposits, calcic, solid and semi-solid; secretions, excretions, mucus, and bacterial plaques, and of disposing entirely of that gelatinous envelope which so completely invests every tooth, even in the best kept mouths.

To quote Dr. Smith, "The treatment of enforced radical and frequent change of environment for all teeth and all mouth conditions, and the maintenance of a perfect sanitation for the oral cavity."

Granting we accept Miller's theory of caries, lactic acid (resulting from fermentation of particles of food), acting upon and decalcifying enamel, does it not appear logical that this entire change of environment would be the great panacea?

The removal of deposits is done by instruments, principally of a file nature. I use the Smith set of files designed for this purpose; next, orangewood points are used (I now use shoe pegs), carried in porte polishers, charged with a fine preparation of silica as the actual detergent. Every exposed surface of each tooth, including that under the free margin of the gum, is polished, and eventually a glistening surface presents itself. Hand power only is resorted to; the use of the engine in any part of the process would entirely defeat the object of this method, for it is by a cultivated sense of touch that we discern the conditions. The sense of touch becomes, in time, very keen—nothing can escape it; it is not so much a matter of seeing as of feeling.

The work has to be exquisitely thorough, and it must be borne in mind while giving a prophylaxis treatment that each tooth has five surfaces, each of which must have its full share of care.

Floss silk is then drawn through interproximal spaces, and, lastly, I apply compressed air, using as high as 50 pounds pressure, carrying medicine, soothing or stimulating, as the case demands; something of an antiseptic nature, anyway, deep into the pockets and free margins of the gums.

This last process is always a source of pleasure to the patient. I have yet to meet the patient who does not hail this spraying with a keen sense of enjoyment.

Following all this, you can well imagine there is nothing left in the mouth but what is aseptic. The patient leaves the chair with a sense of cleanliness in his mouth such as he has never known previous to a prophylaxis treatment.

The personal element naturally enters into all work, and the enthusiasm of the operator kindles a kindred feeling in the patient. It is "catching," and patients give their mouths such care as they have never bestowed on them before.

Continually I preach to them the need of co-operation. Indeed, I do more, I *demand* it. At the beginning I have a thorough understanding, telling them of the full value they shall receive for money and time spent, but adding that I absolve myself from all promises, if I do not have all the aid it is in their power to give me by their constant personal care; that such co-operation is a force to which all foes lurking in the human mouth must yield.

The daily massage of gums by both brush and finger, the use of dental floss, toothpicks, and a first-class dentifrice must not be neglected by the patient.

Occasionally, if a patient has been a little delinquent in maintaining the high standard of cleanliness required, it is almost amusing to notice their shamefaced manner on presenting themselves at the fixed date. This seldom happens, however. Instead, it is a common occurrence to have a patient say, "I start for bed half an hour earlier than I used to do, in order to give extra time for my teeth." The results appeal to the patient's pride, as well as to his sense of comfort.

One important point I must not omit is that I am now advocating brushing the gums instead of the teeth. I get infinitely better results. I say to my patients, "You need not fear, your teeth will not be neglected. The idea is to have the free margins of the gums, where so much infection lies, kept thoroughly clean. The average patient hardly comprehends that requirement, with the idea in mind of simply brushing the teeth.

It has been argued in opposition to this systematic prophylaxis, "It will be all very well if you can get your patients to come regularly, as you specify." My answer to those who offer this objection is, Try your patients, give them the benefits of a few treatments, and see if they are willing to go back to old methods. I think not—in fact, I *know* they will not.

Another opposition (one of which every honest professional man might be ashamed), which has been made is, "If we do this work, with the object of getting such results as you show, what is to become of us? We won't have anything more to do."

The very question shows a misunderstanding of prophylaxis, which does not consist in one, two, or three treatments, but in the constant watching, guarding, and maintaining the mouth in a condition of health.

Probably Dr. Smith has heard more objections raised against this work than anyone else—since he has been longest connected with it. Allow me to quote a few lines from one of his pamphlets on the subject:

"As showing the spirit of the profession, permit the following citations: In the discussion following my first talk on this subject in Washington one gentleman said: 'I guess we don't need any one to come down here from Philadelphia to teach us to clean teeth.' In April, 1900, a much respected professor in one of our colleges remarked to one of his patients, 'Dr. Smith has got a great craze for cleaning teeth, but I don't approve of it.' One operator said, 'It will polish away the enamel from the teeth.' (If this man could have comprehended the real effect of polishing enamel surfaces with pumice, and had had the frankness to declare it, he would have said, 'With each treatment the enamel *improves* in character and texture; it becomes more resistant and consequently less liable to attacks from bacteria, acids, or any injurious agent.' The only 'polishing away' that is done is of the agents of resolution). Another remarked simply, 'I don't believe it.' A few, unwilling to commit themselves to an opinion, simply looked wise and smiled. One gentleman, fully convinced of the value of the discovery, delivered himself as follows: 'Yes, this is all right, but if I adopt this system and stop decay, what am I going to do?' making exhibition of a spirit wholly antagonistic to the instincts of true professionalism.

"It is a pleasure to record that since the reading of the paper and the demonstration of cases before the Academy of Stomatology in June, 1900, there has been a marked change in sentiment on the part of the leading men in Philadelphia and other places. The incredulous smile is giving way to thoughtful investigation, and the simple declaration of unbelief is changing to hearty commendation and approval. Dr. Kirk, after examining a number of my cases which had been under treatment from 18 months to two years, said, 'If our theories of decay are correct, this is the solution of it.'"

No dentist need fear having nothing left to do, owing to the results brought about by prophylaxis. He will not only have work, and plenty of it, but he will be simply crowded out with delightful, profitable work, even from a money-making standpoint, and by a work which, for results, no other activity in the realm of dentistry can touch.

This work of *conserving* is surely the noblest the dentist can find to do. Not only is he preserving to his patient the greatest usefulness of which his teeth are capable, with all the resultant improvement in general health, but is by this treatment using the only means so far known of producing and retaining in its highest state of perfection "The Mouth Beautiful."

COHESIVE TINFOIL AS A LABOR-SAVER.

BY GEORGE W. CLAPP, D. D. S., OTTAWA, OHIO.

No dentist who has used his eyes through any number of years of practice has failed to note that in certain localities in the posterior teeth the average silver-filling fails in a few years. If his conscience be sufficiently active for this to trouble him he will earnestly desire to give his patients work which will be much more nearly permanent. I do not know what his convictions will be, but mine are that the remedy lies in the insertion of fillings composed of a material capable of better things than amalgam and commanding a fee which permits better work. Under such conditions the choice will lie between two materials, gold and porcelain. I have no hesitation in saying that the artist in porcelain may achieve almost ideal results, but an extended observation leads me to believe that artists in porcelain are very rare and that the average dentist may with much better prospects of success turn his attention toward gold. The cavities which I have most in mind are the compound cavities in the bicuspids and molars. These cavities are generally large when brought to the dentist's attention, often involving an entire proximal side and undermining a considerable portion of the occlusal surface. When the cavity has been properly extended laterally and the undermined occlusal enamel has been removed, the cavity is usually so large that the mere time and labor required for the placing of a gold filling looks appalling to the dentist. If he be one of those fortunate fellows who commands from $5.00 to $15.00 an hour, he need care little for the amount of time and work involved, but if he be, like most of us, compelled to make a lump price for the operation and to keep the charge somewhere near the limits of a $5.00 bill, he may well pause to consider. I venture to say that the reason so few gold fillings are inserted in posterior teeth is that the amount of time required to place them makes them unprofitable at, say $4.00 or $5.00 each.

I want to call your attention, in this paper, to a means of placing these fillings with less labor, in shorter time, and at less expense for materials. This is equivalent to raising the price.

It will readily be conceded that most of the time consumed in placing these fillings is lost at cervical margins, since when the fillings reach the occlusal third the work becomes easy and rapid. It is in the gingival and middle thirds of the cavity that the proposed plan effects the saving. Two plans for filling the center of the cavity and the gingival and middle thirds are common. One of these is to fill the center of the cavity with cement, trimming it away from the margins. When the cement has set gold is inserted. This method reduces the amount of gold required and saves the time which would be consumed in condensing that gold, but it does not relieve either the tedium or the difficulty of securing perfect adaptation of gold all along the cervical margins. It is open also to the followng grave objections. In vital teeth, when the cavity is so large that the pulp is but poorly protected against thermal changes, the cement often irritates the pulp to a serious extent. It is difficult to make sure that the cement is properly removed from those portions of the margins and walls where it is not desired. The time consumed in allowing the cement to harden and in freeing cavities from excess cement is often considerable. The net result of this plan is that not very much time is saved.

The other plan in common use for such cavities is to fill the cavity wholly with gold. This plan is open to some serious objections. The first is that if the cavity be large and the pulp vital the presence of so much gold is almost sure to cause trouble. The next objection, not less serious in my mind, is that it consumes an amount of time and gold which makes the filling unprofitable at any price my patient can pay.

As an alternative which has proved profitable in my practice, I want to call attention to the plan for filling these cavities which enables me to offer my patients a much better grade of work than amalgam would afford and yet make a little money on the fillings at an average price of $4.00 to $4.50 each. By this plan the cavity is prepared as for a gold filling. A matrix is adjusted to the proximal surface and wedged tight at the cervical margin. This makes practically a simple cavity. Ambler's Cohesive Tinfoil No. 10 is then cut into strips, rolled into a cylinder to give bulk enough to cover the cavity floor and condensed to place with hand pressure, using one of White's tin pluggers or a mediumly serrated gold plugger. When enough tin has been introduced to lock to place in the same way that gold would, it is thoroughly condensed and the balance of the tin worked in single thicknesses to and fro across the cavity, condensing each time till the cervical half of the cavity is filled. The last layer of tin is not malleted as hard as the layers before it in order that a rather soft surface may be left for the reception of the gold. A single layer of Ney's Cohesive Gold Foil is then laid over the tin and condensed with hand pressure until the tin is entirely covered with gold. Another layer of gold is then adapted in the same way. Both layers may now be malleted down and the filling will go on as an ordinary gold filling. If large cylinders like Ney's No. 3 be used for the completion of the filling it will be found that the operation has consumed very much less time than such operations usually require.

In those large, simple cavities which frequently occur on the occlusal surfaces of the molars the use of cohesive tin results in even more valuable economy of time. Make the cavity floor as nearly flat as may be, cut the tin into wide strips, feed into the cavity with a coarsely-serrated plugger having a large face. The center of the cavity will be filled in remarkably short time, when the gold may be used as before.

Some decided advantages results from the use of this tin. In its place it is a better tooth-saver than gold. It makes it possible for my patient to have a grade of work which it would not otherwise be possible for them to afford. It permits me to discharge my professional obligations in a better manner than I could without it. It permits me to earn quite a few dollars which would otherwise, like the Priest and the Levite, pass by on the other side.

* * *

CONSERVATISM.*

BY H. H. HARRISON, D. D. S., WHEELING, WEST VIRGINIA.

When we attempt to measure the minds of human beings, we think we see at first glance a prominent likeness in them, but upon a more careful analysis we find a very striking dissimilarity. We are therefore forced to recognize the fact, that like the body, no two will fit in the same mould. This same principle follows in all organized matter whether it be animal or vegetable. No two blades of grass are alike, and the millions of leaves in the great forests have each a different shade and form. How wonderful the mental activity and resourcefulness of the Supreme power that made these laws of Nature. How little we feel when brought into this comparison. And yet we all have our own little niche to fill in the superstructure of organized life like the atom or molecules that in their combination form our human bodies. So we can readily see that it is perfectly natural for us as dentists to see things in different shades, colors and forms. We may all have our eyes upon the goal of high attainment, though many may not reach it. Those who do will doubtless travel over different routes, with thorns, briars, thistles and stumbling-blocks in their way, — with now and then a beautiful rose whose fragrance becomes almost intoxicating for a time. Some there have been who have reached this goal, when measured by our present knowledge. They have passed away, — they who have left us this goodly heritage, they who have brought our profession up to its honorable position. They deserve to be honored to-day and their names placed upon the Tablets of history. This would be the Roster — Harris, Buckingham, Watt, Garretson, Taft, Atkinson, Bonwill, Morton and Webb, with others who have not been so conspicuous but still important. Then there are others still upon the stage of action, perhaps not less worthy than those who have left us, that are still forging out link by link the chain of our destiny. Some have been superlative enthusiasts (known in the vulgar tongue as cranks), but with all their eccentricities have done great good, in blazing the way for others who are more conservative and level-headed to follow, with the finishing principle of the "spirit-level." While this chain is being forged in the professional laboratory, let us step behind the curtain and have a look at the proceedings. The first thing that meets our eye upon entering is a notice painted upon the wall in large letters. The Master in charge was very courteous, explained the handwriting upon the wall, and said some of the rules were a little obscure owing to a revision by Dr. Betterment.

---

* Read before the Odontological Society of Western Pa., Pittsburgh, March, 1906.

RELICS OF THE PAST.

Before we critically examine this document we will take a look around. Here we see Dr. Webb's electric mallet and find it rusty and almost out of use. In an adjoining waste room we see a great many little boxes piled up, and upon inquiry find them to be cataphoric outfits, good for neither man nor beast, only recording the history of the decadence of a by-gone practice. We saw many other little things that once belonged to the armamentum of the dentist. They were marked "obsolete." The new things, tried and untried, both instruments and material, that came before our vision, were almost like sands on the seashore.

AMALGAM CORNER.

Prominent among these we found in the "Amalgam Corner." It was decorated with amalgams in glass tubes, in buttons, in fillings in natural teeth, showing that none of it would expand, shrink or discolor in the mouth; blocks cut and polished displaying its beauty and density, — proving its durability. There were a few less than a hundred different brands, all of them the best. A gentleman at the Black Stall explained the proper way to mix and use amalgam. Mix in a mortar, combine by weight and always fill with matrix and rubber dam in place. I wondered at the time whether in some teeth the place for the dam and matrix was not in the operating case. According to my view the most important feature of a good amalgam filling is a thorough preparation of the tooth cavity. A dentist who is very exacting in this will be the same in filling, and will soon learn what brand of amalgam suits him best, and will give the most satisfactory results. Too much emphasis is placed upon the manufactured article and not enough upon the execution.

CEMENT CORNER.

Now let us look into the Cement corner. Here we see about the same variety as we do in amalgams. Cements for pulp capping, for bridge and crown work, for inlays and for fillings, — quick setting, slow and medium, brown, gray, pearl gray, white and yellow. You must have them all for almost every case requires a different shade. Cements require thorough mixing and rapid manipulation, and when it begins to set let it alone severely. It is one of the most important materials we use, and probably the most abused.

This cement corner reminds me of the history of the "Tower of Babel," all talking at once, and seemingly in different tongues. It makes me a little nervous. Think I will take a little fresh air and a nerve sedative. Now I feel better. Well, what next. Oh yes! here is the Gold corner. Glad I brought my sedative with me. Don't mean that gold has been cornered, but here are all the varied forms into which gold is worked for the dentist. Leaf gold, sponge gold, chrystal gold, block gold, pellets and amorphous gold. This array of the yellow metal seems a little bewildering, but we are ready to accept it in almost any form, even in coin. We pay our money and take our choice. The other fellow will always criticize us for not using the brand that suits him. However, we live through it all and are here to tell our failures and successes, especially the latter.

STATUS OF DENTISTRY OF TODAY.

But to return to the notice spoken of a little while ago. The Master of Ceremonies informed me that it represented the present status of dentistry up to to-day — of course in a very condensed form. So I will speak of it only very limitedly.

Some of the records read — Don't extract a tooth that can be retained in the mouth in a healthful state. Don't disturb a natural tooth that renders it less valuable than before. Don't operate along the lines of another's dictation unless approved by yourself. Don't put gold fillings in artificial teeth. Don't extract roots of teeth where they can be made healthful. Don't put on a metallic crown where a porcelain can be made good. Don't put on a porcelain crown where you know it won't stand the strain. Don't regulate teeth when they don't need it. Don't wear an operating coat like a barber. Don't use the same piece of dam on two patients. Don't look too wise when another dentist's patient calls to consult you. Don't teach one principle and practice another. Don't be afraid to state your opinion when you have one. Don't be so dogmatical that you will not listen to another opinion when it antagonizes your own. Don't do unto others as you would not have others do unto you. Well, we will leave the rest as an unwritten law.

We shall now make a brief visit to the operating room and see if we can gather up some straggling straws as they may fall by the way.

PLATE-WORK.

We meet at chair No. one Dr. A., who has just put in an upper set of teeth on gold plate. We asked why gold instead of rubber. The doctor said the case was a peculiar and interesting one. Patient had worn a rubber plate for ten years and when she visited him had been sick for a year with dyspepsia and was seemingly getting worse under the treatment of an excellent physician. Made my examination of the mouth and found the mucous membrane like raw beef — so red and inflamed. Advised the metallic plate, knowing by past experience that it would free the mouth from its inflamed state and probably cure the stomach trouble, for had known a similar case that was cured in the same way. This I thought was a very reasonable conclusion, for I do know that rubber is not fit to be used in many mouths. The dyspepsia was due to the poisoned condition of the mouth by continuity of structure in the mucous membrane. I think that rubber, as a base for teeth, has done more harm to patients than any other material ever used by dentists. It has been the cause for the loss of millions of natural teeth that could and should have been saved. It has weakened the dignity of the profession by being the instrument of the dental advertiser, and has lowered the degree of skill of many a good dentist.

PYORRHEA ALVEOLARIS.

The next chair we visited was No. two, presided over by a fine looking gentleman by the name of Dr. B. He wore a white duck operating coat, and I thought how much better it would have looked in some dark color that would not have shown the splashes from the engine so beautifully. He was struggling with a bad case of pyorrhea and seemed a little preoccupied. Pardon me, doctor, for this intrusion, but I am here to get information that I feel sure you can give me, for I am informed that you are an expert in the treatment of pyorrhea. I wish to know your treatment and what degree of success has attended it. Well, sir, I succeed with all cases that have not advanced too far, and the others I rarely undertake. My treatment is a thorough removal of the deposit around the roots and necks of the teeth, a cleansing of the pockets with disinfectants, acids and astringents, and a complete flushing of the alimentary canal. What do you think is the cause for this disease? I do not know, sir. Am quite in the dark. You know many bright lights assert the cause to be entirely systemic, while others equally informed claim the cause to be wholly local. Am inclined to think that its origin is local, but affected by systemic influences.

Well, Doctor, do you know, I think you are both right and both wrong.

That the true exciting cause is infection, which makes it a local disease, but that the condition of the system has all to do with its development. You know that there are many zymotic germs within the mouth that might infect any wounded tissue; and because they do not always produce this effect, is due to the fact that the human body has within it a protective power called antitoxin that makes war with and destroys these enemies of life.

When this power is sufficiently strong the body is said to be immune. When this systemic influence is weak and a wound is made, these germs become a potent element of infection. You know a surgeon may dissect a dead body and not receive any infection unless there be broken tissue upon the hand; but if the hand should have the skin broken, then there is war in the body of that surgeon. This same law may apply to the mouth; and the general system be partly responsible for the weak or strong antitoxin element that is present. This theory would explain the curative power of local treatment, by removal of the germs that are the exciting cause of pyorrhea. This will bridge the chasm between the "Locals" and "Systemics," and possibly dispel some of the shadows that hover over this dread disease.

CROWN AND BRIDGE-WORK.

We shall now make a call upon chair No. three with Dr. C. in command. Pardon me Doctor, but I am in search of information on crown and bridge work. Will you be so kind as to unlock your information bureau and tell me your experience along the above lines?

Well sir, I don't know that I can give you anything new or startling, but will say that there is a great field open in these lines that in the past has been greatly overworked by incompetent men or those who had little care for results. There must be a very nice discrimination as to when or where a crown or bridge should be placed. In the first place no bridge or crown should be placed in the mouth that cannot be kept as pure as the natural teeth. No tooth should be crowned that can be made secure by filling. And yet a tooth that is very frail and very exposed to accident would be better crowned than to take the risk of filling with the ultimate danger of loss.

Where molars or second bicuspids are to be crowned, gold is the proper thing to use. For the other teeth porcelain by all means, except perhaps in the case of a very short articulation — the first bicuspid may receive a gold crown rather than lose it. There is some room for difference of opinion as to the relative value of the various porcelain crowns now manufactured. I prefer the Logan and Richmond crowns to any other that I have used. They fill my requirements fully. And while there may be others just as good I don't think there are any better. I choose a Logan before a Richmond, except in a short bite or where it must act as a pier for bridge. There is one place where the Richmond is very generally used that I oppose. It is in a case where a pier must be made of a cuspid tooth that is perfectly sound, to attach a bridge extending back to the molars. Make a perfectly fitting open-faced gold crown that may last for years and then when it shall give way substitute for it the Richmond. There is one thing I want to say about the adjustment of any porcelain crown; that the opening in the root shall be made just the size and form of the pin. This thing of cutting any sized cavity and plastering up with cement won't do. I approve, to a limited extent, the use of removing bridges, as they are always very readily cleansed, but have fears as to their durability. Think it a safe proposition to not risk too many until time shall prove their worth. To be perfectly candid I believe that half the bridges worn to-day would be better substituted by a well made and perfectly fitting metal plate — especially gold.

BROKEN DRILLS AND ROOT TREATMENT.

The last chair we shall visit is Dr. D's. He is a little excited, and doubtless has troubles of his own. Doctor excuse me, you seem to be in deep water. I am indeed, have broken a drill in the cavity of this tooth. I sometimes think will never use one again. Doctor don't worry over it, put in some sulphuric acid and have your patient call tomorrow. Look pleasant and let the sunshine in. Suppose you are treating an abscessed tooth.

No sir, but fear it may abscess now. Trust to good fortune and apply iodine on the gum. I don't think we should ever use the drill in a root at first sitting, no matter what its condition. It is liable to close the apical foramen and then we may have trouble. Take the safe plan even if it is more tedious. Doctor what is your treatment in cases of septic roots? "I use hydrogen dioxide, eucalyptus, carbolic acid and iodoform in the order in which they are named." "I see. The combined influence of these remedies ought to cure almost anything except heart failure. Would think any one of these judiciously used might be good, but their use by your plan would mystify me as to which one did the work. Don't like combinations." Some don't like carbolic acid, but it will do the work and do it effectively. Dilute formaldehyde is another very effective remedy. Recently solidified formaldehyde is a prominent medicine and a good one.

I want to say just here that where a case comes to you where the pulp has died under a filling or when there is no opening in the tooth, that great care should be exercised to prevent a great shaking up of your patient. At first sitting the pulp cavity should be opened and thoroughly washed with hydrogen dioxide and the patient dismissed for a brief period.

The officious meddling with a nerve broach, to remove the contents of the cavity, is very likely to raise a lively disturbance that is hard to control.

THE USE OF ARSENIC.

Before closing my paper want to call your attention to the use of arsenic. Not long ago I read in a journal the advice of a prominent dentist, with regard to the discontinuance of the use of arsenic. He said it should never be used. He said if any case could not be handled with cocaine to apply cobalt and you would not need arsenic. I was surprised at his statement, and wondered if he did not know that it was arsenic in the cobalt that did the good work. Of course there are but few cases where cocaine will fail, but where it does, arsenic seems to be our only resource. Don't throw it away, you may need it some time and need it badly.

So in dentistry we find the radical personality well represented, but the mainstay of the profession is the men who are conservative, are ready to and do advance, but with cautious and selected steps. The over enthusiastic may strike a good lead but the safe man must see good results before he has followed the lead too far.

In summing up this whole thing we find there have been many errors, mistakes and blunders and it admonishes us all that it is wise to go slowly and not make statements that are not protected by a reasonable doubt. Again there is a possibility of dentists getting into ruts that are not paved with the polished stones of liberality. My way seems good enough for me, but my neighbor may arrive at just as good results by an entirely different way. So let us all be conservative, be zealous, continuing in good work, not given to harsh criticism, knowing that we are all liable to err.

INDIANA STATE DENTAL ASSOCIATION.

The forty-eighth annual meeting of the Indiana State Dental Association was held at West Baden Springs, Ind., June 26, 27, 28, 1906.

Dr. J. Q. Byram, Indianapolis, president of the association, presided at every session.

Aside from the papers read and discussions, which will appear in The Dental Summary, the following forms a brief report of the meeting of the association:

By vote, $200 was given the San Francisco dentists' relief fund.

Treasurer's report showed expenditures, $518.55, and receipts, $1,559.25, leaving a balance in treasury of $1,040.80.

Regarding the army bill, the following resolution was passed by the society:

To His Excellency, Theodore Roosevelt, President of the United States; the Honorable Charles W. Fairbanks, Vice-President of the United States; the Honorable Joseph G. Cannon, Speaker of the House of Representatives; and the members of Congress from the State of Indiana:

The Indiana State Dental Association, composed of 400 legally qualified practitioners resident in the state of Indiana, respectfully requests your attention to the following resolutions unanimously passed at this, its forty-eighth annual meeting:

Resolved, That the Indiana State Dental Association, in annual meeting assembled, shall petition the President of the United States, the President of the Senate, the Speaker of the House of Representatives, and the members of Congress from Indiana, to enact Senate Bill 2355, passed by the Senate, April 23, 1906, and providing for a commissioned army dental corps into a law, with the exception that we believe Section 2, as amended by the House on March 13, 1906, providing for the appointment of two captains, to be better than that portion of Section 2 of said bill as passed by the Senate, and be it further

Resolved, That we do earnestly protest against the enactment of a law creating a commissioned army dental corps, which contains a section or sections disbarring by age limit or otherwise, Drs. John S. Marshall and Robert T. Oliver, who organized and built up the present contract dental corps, at a great sacrifice to themselves.

Geo E. Hunt, *Chairman,*
Indianapolis.

Officers and committees for the ensuing year were selected as follows: President, A. T. White, Newcastle; vice-president, R. A. Adams, Clinton; secretary, C. D. Lucas, Indianapolis; treasurer, C. W. Throop, Muncie.

Board of Trustees—A. T. White, C. D. Lucas, C. W. Throop, S. W. Van Osdel, O. U. King, B. F. Williams; ex-officio members, L. A. Salisbury, J. A. Stoeckley, H. E. Strain, W. H. Green, C. D. Lucas, M. M. Haas.

Executive Committee—P. H. Chadwick, Rushville.

Ethics—O. U. King, F. M. Bozer, F. J. Prow.

Legislation—H. M. Thomson, G. E. Hunt, J. Q. Byram.

Dental Science and Literature—Chas Kneise, H. C. Sexton, S. A. Bell.

Dental Art and Invention—N. G. Wills, E. R. Kibler, L. B. McCollune.

Necrology—J. D. English, T. S. Hacker, J. H. Morrison.

Organization—J. W. Stage, B. B. White, G. E. Stevenson.

Publication—C. D. Lucas.

Supervisor of Clinics—C. A. Barnhill, Indianapolis.

Time and place of next meeting to be decided later.

PRESIDENT'S ADDRESS.*

BY JOHN QUINCY BYRAM, D. D. S., INDIANAPOLIS, INDIANA.

I assure you I appreciate the honor conferred upon me by electing me your presiding officer for this year. This honor is all the more appreciated because of the fact that just ten years ago it was my privilege to become a member of this association. It is with a source of great pleasure that I note the improvement made in this association within the last decade. The membership has grown from less than 100 to over 350. Not only has the membership grown, but there has been greater individual interest manifested by the members.

One of the most disorganizing factors in a society is petty jealousies. We are to be congratulated that such a condition is not a disturbing factor with us, and that fraternal spirit reigns supreme. Let us keep our association thus; for so long as we remain as one large family, with all interests in common, just so long will our growth be healthy. While a large membership adds encouragement, enthusiasm and strength to a society, let us be mindful that it requires more than a large membership to attain success.

REQUISITES FOR A SUCCESSFUL STATE DENTAL ASSOCIATION.

Some of the requisites for a successful state dental association should be:

1. Its members should reply promptly to all correspondence pertaining to the society. We are too careless regarding our correspondence. Many of you do not realize the necessity of prompt attention to correspondence on matters pertaining to the association. The officers and members of committees are busy, and it requires a great deal of their time to attend to their duties. If they are required to write from two to four letters before you respond, their work is unnecessarily increased.

ELEVATION OF THE PROFESSION.

2. A state dental association should be a power for the elevation of the profession. If we study the history of the dental profession, we find that most of the progress has been made since

---

*Read before the Indiana State Dental Association, June, 1906.

its members have banded together for intercourse of thought. It is hard to accomplish much individually, but when we meet together and exchange ideas, it is then that we become broader men and women. Our vision is limited by our horizon, and if our horizon is a 12x14-foot dental office, scented with H_2S gas, iodoform, and other odors less pleasant, we are not likely to view our profession in a truly professional manner. The great men of the profession do not stay in their offices 365 days in each year, but spend a portion of their time mingling with their professional brethren, giving to the profession that which they have mastered, and receiving new ideas from others. The personal contact with eminent members of the profession gives us inspiration and enthusiasm, so that we return to our work with new ideas, renewed zeal and energy, giving our patients the best services that is possible for us to render.

PERSONAL RESPONSIBILITY.

3. Each member should feel a personal responsibility for the success of the society, and should add his mite willingly. He should perfect himself in some particular line of work, so that he could give a clinic with a few hours' notice. It is true that many members do not have the inclination to read papers or give clinics, but the responsibility is none the less because the inclination is lacking. A profession is not obligated to its members, but every professional man is morally obligated to give something to his profession. Had it not been for those dentists with the true professional spirit, who gave so freely of their time and money, dentistry would not hold the high place among the sciences and arts that she does today. I realize how difficult it is for some members to take part in discussions or to give clinics, but the time has come when we can no longer hedge behind the plea of inability; so let us make a special effort to perfect ourselves in some particular line. He who writes a paper or gives a clinic not only aids others, but benefits himself, for he has more nearly mastered some branch of his profession. We owe it to the profession that we perpetuate the heritage that has fallen to us, and be not like the ungrateful servant who kept his pound hid under a napkin.

ORIGINAL RESEARCH WORK.

4. Original research or experimental work should be encouraged, and those members who have the ability and show an inclination to do this line of work should be encouraged in a substantial way. It has been said that man cannot live by bread alone. It is a significant fact that man can not live without bread. He who engages in original research work requires bread just as you and I. But if he were to depend upon original research and experimental work to bring him bread, he would soon find the wolf knocking at the door. It is to be regretted that we do not have more members of the dental profession doing original research, but we have not the right to ask a man to devote his life to a work without remuneration, so the only way to encourage this line of work is for the association to create a fund to be expended in original research and experimental work.

ETHICS.

5. Its members should have a keen appreciation of ethics. While a member of a state dental association is bound to maintain the honor of his profession and to enlarge his sphere of usefulness, he should need no code of ethics, for his knowledge of right and wrong, and his desire to benefit suffering humanity should guide him in leading a pure professional life. It is unreasonable to expect some members of the profession to be ethical, for they have no professional ideals. The greed for gain is the one ideal, and they will resort to any method of practice which will lead to this end. It is to be regretted that so many members of dental societies have so little regard for ethics. There are some who seem to study the code, and see how far they can stray from true professional ethics without infracting the code. I believe such members a greater menace to the profession than the honest advertising dentist. While the primary object of practicing a profession is the compensation received therefrom, it is, however, the duty of every dentist to be interested in the welfare of his clientele, for our patients have the right to expect the best service that is possible for us to render, and in return it is our duty to ask a compensation commensurate with such services. Our patients should be made to understand that they are paying for professional services and not prices for "dental work."

CHANGES IN DENTAL PRACTICE.

There has been a great change in the practice of dentistry within the last decade. We have learned that good dentistry means more than performing operations that will be permanent, that the performing of such operations should be done in such a manner that our patients will not be disfigured, or their health impaired. We are appreciating the harmonies of the human countenance more than before, and we are realizing that any operation, be it ever so permanent, is not the best if it disfigures the countenance.

There will be many changes in the practice of dentistry in the future. The division of the profession into specialties will insure better services to our patients. Orthodontia was one of the first subjects to be treated as a specialty of dentistry. Even now there are post-graduate schools in this branch where the scientific correction of irregularities of the teeth is taught as a specialty. And who will deny that those specialists in this great specialty are rendering their patients better services than the general practitioner who attempts but a few cases each year.

The principals and practice of porcelain inlay work will be familiar to a large number of dentists in the future, but the best results will be obtained by the porcelain specialist who limits his practice to this particular branch of operative dentistry. The methods of constructing porcelain inlays are still in a primitive stage and the results obtained are not perfect, but from an æsthetic point of view the results are far superior to those obtained by the use of any other material. It is to be regretted that so few dentists are familiar with the principles of constructing inlays.

There will be specialists in prophylaxis limiting their practice to this branch of oral surgery and who will receive referred patients from those busy dentists who do not care to practice this particular specialty. The practice of prophylaxis is receiving a great deal of attention at the present time. This branch of dentistry is too badly neglected, and too many dentists are prone to remove the salivary calculus from the teeth without giving proper attention to the thorough polishing of them. Too much credit cannot be given to Dr. D. D. Smith, and others, for the earnestness they have manifested in this subject. They have shown clinically that caries can be abated and that the general health of the patient can be improved by the practice of prophylaxis. Dentistry of the future must prevent caries and oral diseases of local origin in addition to replacing lost tooth structure and treating diseased oral lesions.

The construction of dentures will become a lost art to most dentists practicing in cities. There should be specialists in all large cities limiting their practice to plate-work to whom dentists may refer patients rather than take impressions and bites, and send these to a dental laboratory for the construction of the denture. All must admit that the specialist in this great branch can give to his patients better service than those who are too busy to give the patient the proper care and consideration.

The specialist in anæsthesia who is skilled in extracting is becoming a necessity in all our large cities, and now it is not uncommon for a dentist to limit his practice to anæsthetics and extracting.

SPECIALIZATION.

It is probable that I may be called a visionary, but in studying American progress one can easily note the tendency to specialization in all professions. Very few of our ablest lawyers practice general law, but prefer to specialize. Men spend many years perfecting themselves to teach one subject. Even certain specialities of medicine which but a few years ago seemed too limited are becoming more limited, and now the oculist is not necessarily an aurist. We have none the less confidence in the orthopedic surgeon because he does not attempt abdominal operations.

If, by constant application to one line of work, we can become more proficient, is there any reason to doubt the efficiency of the specialist? Some one may ask what is to become of the dentist who does not specialize. The fact that one does specialize does not mean that he has more ability than his professional brother who remains in general practice, but that he has acquired more skill in one particular branch of his profession. There will always be a demand for the general practitioner, but he must awaken to the fact that certain operations can be treated by the specialist who is treating them daily. It must be admitted that it will require some education of both the profession and the laity to bring about these conditions, and both must learn that the dentist who refers patients is none the less competent or that the specialist is more skillful except in his specialty.

FIFTIETH ANNIVERSARY MEETING.

The Indiana State Dental Association will hold its fiftieth anniversary meeting in 1908. While this is two years hence, the time will speed so rapidly that this date will be upon us before we realize it. This association is one of the oldest state societies in existence, a distinction which we should feel with some sense of pride. It seems fitting to celebrate this meeting by making the fiftieth anniversary meeting the greatest state meeting ever held.

A large meeting cannot be held without considerable expenditure of energy and money. This association should decide this year whether we should attempt this great meeting. Should we undertake it, each member must put his shoulder to the wheel and help make it a success. Great things can only be accomplished by united effort and concerted action, and all large undertakings must be well generalled to insure success.

It seems fitting that our four sister states should be our invited guests. I recommend that the members of the Illinois, Michigan, Ohio and Kentucky State Dental associations be invited as our guests. I further recommend that all essayists be from without the state and that each of our sister associations be requested to furnish one essayist.

There are times when members who have served an organization faithfully should be honored. With this in view, I suggest that all life members be made honorary presidents of this meeting. The executive committee should consist of ten members, five of whom should reside in Indianapolis. The chairman of this committee should be elected by this association and he should be given power to appoint or remove other members of the committee. This committee should organize as soon as practicable and appoint a finance committee which should solicit subscriptions from the members of the association and be able to report at the next annual meeting the amount subscribed. This meeting should be widely advertised. Every member of the association should become enthusiastic and be on the advertising committee.

In conclusion, I wish to thank all the officers and members of the committees for their faithful support. The program is before you and it speaks for the work of the executive committee and the supervisor of clinics.

DISCUSSIÓN.

Dr. G. E. Hunt, Indianapolis—There were two points in the address that particularly struck me. I believe in specialization, but it seems to me the tendency is towards so much specialization that after a while we will see signs like this: "Dr. So-and-So, Dentist. Practice limited to porcelain inlays on the mesial surface of the superior right lateral incisor." There is a good deal in dentistry, but not so much that in an average-sized town the general practitioner cannot perform all the operations. I should hate to see the good, old-fashioned general practitioner pass away, the one who is engaged in polishing a vulcanite plate when a patient comes, who leaves the laboratory to put in a gold filling, and leaves that to treat an abscess.

Now, in regard to original research work. I don't know whether we will ever get any great results from the state association or the national association contributing funds to the support of men who are doing original research work. The trouble is, we are all so extremely competent to do this work it would be difficult to decide which of us should receive the money to carry it on. The best research work in the past has been done by busy practitioners. The time may come when we will find it advisable to follow the plan outlined by our president, but I don't believe it is here yet.

Dr. J. D. Patterson, Kansas City—I was very much pleased with Dr. Byram's address. I am sure it deserves great praise. In the early part of the address we listened to a very able exposition of what our professional duties are and how often they are neglected. I have thought that on an occasion of this kind, and in speaking to an audience of this kind, that sort of advice is lost upon it, because the people we desire to reach by such advice are not here. The ones here are those who are active, the ones who make original research. The ones who do not, and to whom the advice is given are not here. The ones who do not write for dental literature, and who have been advised in this address are not here; those who do the writing come to the association meetings. Those whom we would reach by such advice are at their homes attending to their business, and very many of them are not attending this meeting on account of selfish motives.

I was very much interested in one or two other points in the address. I think, however, I will only notice one, and that is in respect to specialization in dentistry. There is one thing I believe, and that is that the man who confines himself to a specialty should have first been years in general practice. I have never known a specialist who became a specialist upon leaving school, and directing his attention to that specialty, but who was a very one-sided man. Perhaps the only well-established specialty we have is that in orthodontia. I believe the orthodontist who starts in his specialty upon coming from school becomes a very much one-sided man. No matter what specialty a man takes up, whether it be oral surgery or porcelain inlay work, I think to be successful he should be first in general practice for several years. I suppose there are not many orthodontists here, but I will say that I have found the majority of those belonging to the national association are continually bringing before us propositions and theories respecting their specialties which are very much open to discussion. They only look at professional work through the eyes of the specialist in orthodontia. I think there is no specialty in dentistry or medicine that embraces so many cranks as the National Association of Orthodontists. They say such work should only be done by orthodontists. I don't think that is a good proposition to make. They recently have announced that hereditary influences have nothing to do in causing malocclusion. As for myself, I shall never be a specialist exclusively. The pursuance of one line of work to me is very tiresome indeed. I am a hard-working man, and the recreation I get in the division of labor in all departments of the work, the relief and change from one kind of work to another, is one of my great pleasures. Were I to go to my office each morning and know I had only one department of our work before me, and would have to do that work week after week, it seems to me I should go mad. The relief to be found in change of work is something we all desire. I am very pleased to be here this morning, and wish again to compliment the president on his very excellent address.

Dr. G. W. Cook, Chicago—The point both Dr. Hunt and Dr. Patterson have brought up in regard to specialists I think is a timely word. I think Dr. Patterson emphasized one thing very forcibly, and that is the point about orthodontia. The man in the smaller places has to do his own work in that line. Smaller communities do not furnish enough material for a specialist—and usually the specialist does about as bad as the other fellow, anyway. At least, that is my experience. The biggest cranks, as Dr. Patterson said, are those specialists. I know a doctor in Chicago whose specialty is diseases of the stomach, and if you go to him to have an ingrowing toenail treated he has to wash out your stomach for it. I can see how men get terribly warped in their mentality when they get to doing only one part of the work. This idea of becoming a specialist seems to me to be rather foreign to our profession.

Dr. Patterson made another excellent point, and that is that if a man does specialize at all it should be only after practicing the general line of his profession for several years.

The point in reference to research work was very interesting to me. The president brought up that point in his address. The best research work that has been given the profession has been done by those who are practitioners. They find the needs of the profession, and I think no more harm could be produced in the profession than to put such a fellow in a laboratory to work on some specialty for the rest of his life. He does not know the needs of the profession. We see in colleges how poorly the medical man does his work because he is not familiar with what the needs of dentistry are. If a man did not have to depend upon his profession for his living, but would be compelled to do a certain amount of work each day for charity, and spend the rest of his time in research work, he might be able to work out some problems.

Dr. R. I. Blakeman, Indianapolis—I first want to thank our president for his good and interesting address. Then I want to say a word in regard to the specialist. I thought the president's remarks were very timely, but since they have been scored so heavily I think somebody should come to the rescue. I am glad we have specialists in our profession. It seems to be almost impossible for a man busy with daily appointments to look after difficult cases that ought to be specialized. Take cases of orthodontia, which must be seen whenever necessary. If they come in and you have long and difficult operations ahead filling up the entire day, it is impossible for you to look after them properly.

Another specialist we need is the extractor. It seems to me the ordinary practitioner is almost unfitted for extracting. I think this is true in the city; of course the country practitioner must do all kinds of work.

Dr. F. K. Ream, Chicago—I have been very much interested in the address of the president. The remarks that have been made about the specialist to me are of such serious import that I cannot keep still. I am a specialist, and I think the specialist is the product of a demand by the profession.

Sir Alfred Farnsworth, the great English editor, said for a man to succeed in this century he must do some one thing, and do it well. I think in order for us to get the best results and the highest results we should have specialists, especially in the great cities. I am sure the profession agrees that men who have an opportunity to patronize the specialist rejoice in that privilege. I think Dr. Patterson and Dr. Hunt should be a little more liberal in that line. I am in a position to know the attitude of the profession towards the specialist. Indeed I have remarked to some gentlemen who were very illiberal in that regard, and boasted that they had no occasion to send their cases to a specialist, and wondered why others sent out cases they could take care of themselves. An occasional case from the general practitioner will make it possible for the specialist to live in that community, and sometime they may want him, and want him badly.

The hospitality and genial treatment of people from other states by the Indiana State Association is proverbial in Chicago, and in the very beginning of this meeting I have discovered that you have not been misrepresented.

Dr. L. O. Green, Chicago—I want to compliment this association on the able address of its president. I believe the day of the specialist is here. We cannot all be good in all lines, but we can be good in some lines with plenty of practice. Usually the general practitioner has some line he prefers to all others, and if he will devote all his time to that one line he will certainly become proficient in it. Of course we will always have to have the general practitioner in the small towns, but I believe the specialist in the cities is here, and here to stay.

President Byram—Inasmuch as the president's address has been made an open subject I wish to say a few words. In reply to Dr. Patterson I will say that I hope some of the absent members may read the address.

In my address I did not intend to give the impression that all communities would be filled with dental specialists within a short time. Nor do I think the address will cause many to consider limiting practice to one special line.

A few years ago George Wilson of Cleveland gave up his general practice and began specializing in prosthetic dentistry. And so far as I know he is the only dentist who limits his practice to this specialty. I believe we are agreed that Dr. Wilson will do better service for the patients who are referred to him by dentists than can be done by taking impressions and then turning the case over to the dental laboratories. If a dentist is too busy to practice special lines of work let him refer the patients to some one who is specializing.

REPORT OF THE COMMITTEE ON DENTAL SCIENCE AND LITERATURE.*

BY H. C. SEXTON, D. D. S., SHELBYVILLE, IND.

Some great authority, Emerson, I believe it was, once stated that no one who valued his time should read a book until it was one year old, for by that means he would avoid the rotten literature which died in the very "bornin." This gives me the excuse. I want to speak of one piece of dental literature, an essay by Dr. W. D. Miller, of Berlin, read before the International Dental Congress at St. Louis, in August, 1904, but not given to the dental profession at large through the dental journals until within the past year. Our dental publications, you know, are always right up to date 12 months afterward.

This essay of Dr. Miller's, entitled: "A Study of Certain Questions Relating to the Pathology of the Teeth," is worthy of the serious consideration of every member of our profession, and I advise those who have not already read it to do so immediately. At St. Louis this essay received the gold medal for its excellence.

I cannot refrain from quoting a few conclusions arrived at by the essayist:

"Taking all things into consideration, we are forced to the conclusion that the chances for the production of caries are about as favorable in a mouth with alkaline as in one with acid saliva."

---

*Read before the Indiana State Dental Association, June 26, 27, 28, 1906.

"Races, both of men and animals, that live solely on meat are entirely free from caries."

"The eating of fat throws a protective coating over the teeth that tends greatly to their preservation." The essayist points out the fact that the Eskimo is immune to caries.

In consideration of the foregoing, what chance, then, has a pampered white child whose food is almost entirely the carbohydrates to have a good set of teeth? Almost no chance at all, it would seem.

If we accept Dr. Miller's teaching (and what higher authority have we on the subject?) then every dentist must declare himself as uncompromisingly opposed to vegetarianism. Caries of the teeth come from fermentation and not from putrefaction.

Another point: a nodule of tartar on a tooth is a protection against decay, as proved by Dr. Miller beyond any doubt.

During the past year the mucin theory of decay, as advanced by Tolman, of Kassel, in Germany, has received considerable attention and discussion, for the most part unfavorable. Dr. Tolman holds that owing to the very short stay of the carbohydrates in the mouth lactic acid could not be formed, that the fermentation processes in the mouth play no part in the production of caries, which is due solely to the action of that portion of the saliva called mucin.

This appears to be one of those idle mushroom theories that are forever springing up and whose life is scarcely longer than the day that sees their birth. If I were strictly following Emerson's advice, Dr. Tolman's theory would not be mentioned, for I am sure that in another year it will have passed out of all remembrance.

A peculiar phase of anaesthesia, that produced by blue light, has attracted attention and comment during the past year. It is a curious discovery of science. Undoubtedly anæsthesia can be produced by blue light, and a patient will undergo extraction of a tooth with little or no pain and yet be conscious all the time; but the time of application is so long and the continuance of effect so short as to preclude it in practice. The results are also uncertain; some patients being not affected at all. The question with some is, is it not rather an autohypnotism than a veritable therapeutic effect of the blue rays. But if blue rays are, in fact, so sedative to the nerves, would it not be well to have everything about us the color of blue? We could even be a little blue ourselves at times if it prove a help to our over-sensitive patients.

Most dental literature one sees in the daily papers relates either to some old inhabitant who has cut that old chestnut, a third set of teeth, or to someone who has swallowed an artificial set and either dies or is opened with prayer by the surgeons; but during this last winter the papers revelled in a new item. A New York dentist who worked on Prince Louis of Battenberg, a grandson, I believe, of King Edward of England, made a charge of $1,000, which, it was estimated, was at the rate of $83.33 per hour for his work. This is more by 33 cents than we ever get here in Indiana, but since Prince Louis was satisfied and the bill was paid, it would seem that no one now has the right to object.

The dental magazines during the past year have been given up largely to the two subjects of orthodontia and porcelain inlay. On the subject of extraction in orthodontia Dr. Case of Chicago has published some very interesting and very authoritative essays that should be at least read by all dentists whether practicing orthodontia or not.

Of bibliography during the year there are only a few things I would mention.

"Orthodontia and Orthopedia of the Face," by Victor Hugo Jackson, is written in advocacy of his method of regulating by means of ingeniously constructed cribs and spring wire. The great advantage of Dr. Jackson's method is the fact that the appliance is removable and replacable by the patient at will, thus allowing all the time perfect cleansing.

A new edition of the American Text Book Operative Dentistry was brought forth this past winter, and deserves well of the profession, as no one can doubt when he glances over the names of such contributors as Drs. C. N. Peirce, James Truman, Louis Jack, Edwin T. Darby, S. H. Guilford, M. H. Cryer, Edward C. Kirk, Louis Ottofy, Calvin S. Case, and many others.

With the December, 1905, issue the International Dental Journal ceased to be, the reason being, as Dr. James Truman, the edior, states, "the fact that the dentists of the first decade of the twentieth century in America are not prepared to accept, much less stand for the principles that this journal advocates." These principles, as we all know, were independent journalism, freedom from all entangling alliances, with dental trade houses.

The passing of the International is much to be regretted.

In December, a new trade journal called the Dentist's Magazine made its appearance, the publishers being the Cogswell Dental Supply Co., of Cleveland, O.

It has been the hope of dentists for years that science would produce for us a translucent cement, and many manufacturers have made attempts at it. Recently Harvardid porcelain was put on the market with a great flare of trumpets. It claims to take the place of porcelain inlay work.

About Harvardid I have but a few words to say. It makes a beautiful filling; the colors of the teeth in which I tried it could be matched almost perfectly; but otherwise it is worthless. It has about as much edge strength as an oyster cracker, and 24 hours after it has set you can see the crevice left by shrinkage, with the naked eye.

WHY AMALGAM FILLINGS FAIL.*

BY N. K. GARHART, INDIANAPOLIS, INDIANA.

If man had been born perfect it would necessarily follow that his work would be accomplished in a perfect manner. Since the human race is full of imperfections, it is quite natural for all of us to make mistakes now and then, but after making them once, experience should enable us to avoid repeating them again.

Collectively speaking, we are divided into three classes, namely, good, bad and indifferent. The creations of our brains and hands will always bear the stamp of our personality, consequently the work that we turn out will in like manner be good, bad and indifferent. So long as the demand for plastice fillings exists, the market will provide alloys that are good, bad and indifferent. At all times they will fall into the hands of good, bad and indifferent operators, and for which reasons we may always expect a fair percentage of amalgam failures.

Every department in the dental field has made wonderful progress in recent years. The increasing number of amalgam failures is not in accord with the recent achievements that have been made in operative dentistry. Heretofore I have called your attention to the reasons why we may always expect a moderate percentage of such failures to prevail, while on the other hand we must search for other causes that will account for the great increase that will be found in this particular branch of dentistry.

---

*Read before the Indiana State Dental Association, June, 1906.

MODERN ALLOYS.

Will modern alloys preserve teeth when used in the proper manner? In order that I may answer this question in a satisfactory way, I must take you back a period of fully 12 or 14 years when alloys were in an embryonic stage of development. At that time the usual commercial article contained from 35 to 50 per cent. of silver, while today they vary from 50 to 68 per cent. of silver. Experimental work has revealed to us that simple binary formula will not produce amalgams that are free from shrinkage. We have also learned that gold does not impart any virtue to the alloy. We have found that it is positively essential to use a tertiary formula, or one containing no less than four metals in its composition. Furthermore, it must carry from 60 to 68 per cent. of silver.

The last, but not the least, important factor is the cutting process, since it has been determined that the thickness of the particles must be very uniform, that is, the thickness of cut must be correctly proportioned for each formula. For every change in the formula there must be a like change in the cutting process. In our own factory we have brought the process of manufacturing alloys down to a machine basis in order to eliminate all possible chances for error in our work. The smelting process has been reduced to such a system that it is next to impossible for any error to creep into that portion of our work. Automatic cutting machines produce a uniform cut of a definite thickness. Self-controlled annealing ovens take care of the annealing process, and owing to their automatic construction every lot of alloy is bound to be annealed alike as to time and temperature. The final test on the micrometer of the finished product will reveal any mistake that might have been made during the manufacturing process. It is hardly possible for error to result owing to the machine methods employed in all departments of the manufacturing process, although as a means of checking up the product, the micrometer test will always prove the standard of the finished alloy. The best modern alloys will possess a very faint trace of expansion; furthermore, they require a pressure of 400 to 450 lbs. to crush a filling made in the form on a cube measuring one-tenth of one inch. Summing up the achievements that have been made in the manufacture of alloys, the fact cannot be denied that the very best grade of modern alloys are capable of preserving the teeth on a par with any other filling material providing that they are used in the proper manner.

REASON WHY AMALGAM FILLINGS FAIL.

We will now take up the actual reasons why amalgam fillings fail and it is well to bear in mind the fact that the foundation of all failures must be first taken into consideration. The law of compensation in reality solves the problem why amalgam failures are on the increase. The laity usually get what they pay for and as long as dental operations are to be sold on a material basis, then we cannot expect much improvement in the amalgam situation. You certainly need a new departure society in dentistry, a band of men who will stand together and insist upon being paid for professional services. Dentistry of today is too broad a field for one man to cover it all, consequently members of this new corp will specialize in such directions where their inclinations and ability will bring the best results for their patients. Right before me is a splendid organization of Indiana dentists that if they were collectively kept together in principle and practice, it would be the means of producing a much needed revolution in dentistry. A better condition would result for both the public and profession. "United you stand today and divided you fall tomorrow" only to return to your respective offices and fall into the same rut of cheap prices from whence you came. The public are not to be blamed for cheap dentistry. Why blame them for buying amalgam fillings at so much per ounce? The public have been taught to buy dentistry on the same commercial basis that they purchase their groceries. The cost of materials is the least of all things that should be mentioned to a patient. The laity must be educated to know the difference between cheap and good dentistry. When they do know the difference you will find them willing and able to pay for your services. The increasing number of amalgam failures is due to a retrogression of amalgam prices.

We will probe our way into the mysteries of amalgam failures and see what the results of our investigations bring forth. We will start at the bottom of the ladder and climb up one rung at a time so that the evidence that we have accumulated will overwhelm such adversaries that might have an occasion to attack it.

AMALGAMATING THE ALLOY.

The "mixing process" is the first step in the process of our investigation and I have much fault to find with the prevailing method of amalgamating alloys. If we are to start out with a homogeneous alloy we should wind up with a homogeneous amalgam. The very best grade of modern alloys do not combine readily with mercury and even after the combination of the metals has been effected, there remains within the mass a large surplus of mercury including a fair percentage of particles of alloy which have not succumbed to the action of the mercury. During the process of wafering the amalgam, also including its insertion in the cavity, there invariably remains a large percentage of free mercury together with a lesser proportion of unamalgamated alloy; so in the course of time two evils are bound to develop in the way of shrinkage and lack of permanency of form. The shrinkage is due to the surplus of mercury, while the slight change of form is the result of particles of alloy acting upon the free mercury, thus causing a change in the crystalline structure of the amalgam. The only remedy we have for such troubles is to spend more time in mixing the alloy, such as triturating it with a faint surplus of mercury and removing the surplus of that metal by using gentle pressure. Return the mass to the mortar or palm of the hand and work it vigorously until it has resoftened. Wafer again and continue the kneading and wafering process until all told four operations have been performed. It will occasion a surprise on your part to find out how much more mercury will be removed from the mass when working your alloy in this manner. You will also succeed in producing a homogeneous amalgam with the exception of a certain percentage of free mercury that only can be removed as the amalgam is inserted into the cavity. When the mass of amalgam is large, the final wafering process should be performed by dividing it into several portions and wafering each one separately.

The success attained in producing a good mix does not altogether depend upon the amount of mercury that you use as much as the amount that you succeed in removing from the mass.

OBJECTION TO QUICK-SETTING AMALGAMS.

While the quick-setting alloy is an ideal material for saving teeth, yet on the other hand the quick-setting features are often the cause of amalgam failures. The operator endeavors to fill too many cavities with one mix, consequently the amalgam is used after partial setting has taken place. These fillings are lamentably weak in edge strength, and shrinkage ultimately prevails because the operator cannot work out the surplus mercury after it has chemically united with the metals of the alloy. At least two mixes should be made for large contour fillings in the event that quick-setting alloys are used.

PREPARATION OF THE CAVITY.

Our third cause for amalgam failures may be readily found in the preparation of the cavity. Just step into the average dental office and observe how the operator prepares his cavity for an amalgam filling. Note how rapidly it is prepared: the amalgam is mixed and inserted, after which the patient is dismissed with the usual admonition to call later in order that the filling may be polished for appearance sake. Call again later and perhaps you may find him preparing a cavity for a gold filling. Kindly make a note of the time that he takes in preparing this cavity, also the skill and care that is put forth in filling it with gold. In this instance his very actions portray care and anxiety for fear that his filling might not *pan* out just right and which is a marked contrast to the indifference displayed in the amalgam end of his business.

It is a mighty poor rule that has no exceptions, and that there are exceptions to these cases I am frank to admit. It is because of these exceptions that we are frequently asked, "What alloy does Dr. Blank use? His fillings show up so well that I would like to try some of the same alloy." Here is a frank confession that Dr. Blank's fillings are saving teeth while the other party's has failed in this respect. The alloy and not the man receives credit for the good that has been performed.

USE OF THE MATRIX.

Failing to use a matrix where indicated may be considered the fifth cause for amalgam failures. In such instances where matrices are necessary the amalgam cannot be properly condensed, and for which reason a large surplus of mercury is present in the finished filling. Great shrinkage ultimately prevails since the amalgam cannot be handled unless it is in a very plastic condition.

DIRECTION OF STRESS.

We know of men who have been schooled and trained to properly qualify as civil, electrical and mechanical engineers, so in a like manner a proficient dentist might be termed an oral engineer. The cement foundations that he lays, as well as the bridges that he builds, are engineering feats, providing that they are of an enduring nature. If he has not given proper occlusion a study and is equally as well informed upon all of the fine points of stress incident to mastication, he cannot properly pose as an oral engineer. In the preparation of certain classes of contour cavities, lack of attention is very often given to the vital point of stress, therefore we find so many cases where such fillings have been improperly anchored so that they do not stand the strain that the force of mastication will impose upon them. The action of continued stress produces a movement in the filling and the margin that is subsequently formed is erroneously regarded as shrinkage. We have here an example of the sixth cause for amalgam failures.

SHRINKAGE.

Shrinkage pure and simple is the seventh cause for amalgam failures. It is in reality the most important one to be considered. Surplus mercury left within the finished filling is the cause of all shrinkage. Due consideration must be given to that class of poor alloys which are naturally "shrinkers." However, I am discussing amalgam failures in such cases where the best of modern nonshrinking alloys are employed.

INSTRUMENTS.

I cannot lay too much stress upon this class of failures because it requires so much stress to condense a good amalgam in the proper manner. To begin with, the average operator is poorly equipped with the right kind of tools for amalgam work. The average amalgam instrument such as the present market affords, is far from an ideal implement. The amalgam worker must make his own instruments, having them of such shapes and sizes that will enable him to cope with all classes of filling operations. The condensing surface should be smooth and not serrated. The handles should be massive like those employed for cleavers. It is certainly reasonable that large handles are necessary in order that you may command a good purchase on the instrument. You must use pressure and plenty of it. As the soft material works its way to the surface, don't merely brush it away with cotton. Remove all of the softer material by employing specially made instruments, something in the nature of scalers. You must remove the softer material by paring it away until the hard surface is exposed to view. Continue to build on your amalgam, using in the meantime plenty of force in condensing it into the cavity and removing from time to time the softer material as described heretofore. Do not stop until you have built up the filling a safe distance above the top so that in cutting away the soft amalgam you are sure of a dry surface, which is to be properly shaped down and burnished well, especially the margins. Do not forget the importance of using just as much skill in preparing the cavity as you would for gold, allowing due respect for proper anchorage. Polish your fillings some other day, or at such a time when you know that they have reached their maximum hardness. A filling that is so made will not shrink and will save the tooth on a par with any other material that you have at your command this day.

OTHER CAUSES FOR FAILURES.

Other causes for amalgam failures may be attributed to the indiscriminate use of alloy for filling purposes. Due consideration must be given to the location of the cavity as well as the condition of the tooth structure. The filling material must be selected, such as will possess the right features, that will be in keeping with the requirements of each particular case.

TOOTH STRUCTURE.

We must concede the fact that the tooth structure of our hardy forefathers was by far healthier and less susceptible to decay than that of this present-day generation. Darwin has called our attention to the gradual change in the various forms of life which is necessary to cope with the changing conditions of their environment. So improved methods in dental surgery and improved materials and appliances are constantly endeavoring to counteract the gradual degeneration of the present-day tooth structure. Nature seeks to take away from us that which we do not use. Our daily food is so prepared that it will practically melt in our mouths. Until we learn to use our teeth as we use our brains and muscles, we may look forward to a toothless age. We must exercise all of the members of our body if we expect to keep them in a healthy and normal condition, bearing in mind at the same time that "cleanliness is next to Godliness."

DISCUSSION.

Dr. A. T. White, Newcastle, Ind.—I thought it unfortunate that I should have been selected to discuss this paper. I have been a disciple of Mr. Garhart's so long that anything I might say at variance with his paper would seem almost like going back on my grandmother.

Mr. Garhart speaks of the cheapening of alloys. I think if we get hold of good alloys, something we have confidence in, and then let the designing agent, who comes around to our offices, slide, we will have less trouble. When we learn to use a thing well we should stick to it. As to the crushing strength, I don't think there is any doubt but that the average alloy is good enough. I have never seen any Acme alloy crush in the mouth.

Of course I think we ought to have more money than we do, but at the price we now charge we can afford to put these alloy fillings in in a thorough manner. I think we sometimes slight them, not because we cannot make a living at the work, but through carelessness. I doubt the wisdom of mixing the alloy on the palm of the hand. I use a mortar. I think you will not have as clean an alloy if you mix it in the hand as in a mortar, as in the former way you get a certain amount of the cuticle mixed with it.

I agree with what Mr. Garhart says about preparing a cavity for an alloy filling. We don't cut back into the crown of the cavity to get a good, firm retention. Get a step cavity whenever you can.

I have heard a great deal said about making your own instruments, but I prefer to send down and get an S. S. White burnisher. I use, of course. something different for shaping up the fillings, but for packing it into the cavity I think three or four ball burnishers of different sizes are all that is needed. As for filling a cavity that has not a retaining wall, I never do that. You *must* use a matrix to get a good filling. A good deal of trouble originates from rough overhanging edges up under the gum line. I find that a little strip of rubber dam drawn tightly up under the gum around the margin of the cavity will give good results. It will burnish a hard amalgam.

Dr. R. I. Blakeman, Indianapolis—This is a very good paper. The day of amalgam has not entirely passed, as some of our members who are not present possibly seem to think. I quite agree with Dr. Garhart as to the importance of using amalgam under pressure. I think it should also be thoroughly triturated. I do not think the best results can be obtained, however, by using ball burnishers. The first part of the filling, it seems to me, might be used a little soft, and at that time the ball burnisher might be used; but to use a serrated plugger with a broad surface and mallet it in, it seems to me, would be the best way. The surface should be scraped off and then when your matrix is removed it seems good practice to wipe off the edges of the filling with heated gold pellets. The sharp point of contact the matrix forms with the tooth brings out a thin edge of the filling that is usually very soft. If that is wiped away with gold you eliminate the soft margins that otherwise might shrink and produce bad results.

Mr. Garhart—In regard to mixing the alloy in a mortar, I think that the most cleanly way of making the mix, but 90 per cent. of the dentists mix the alloy in their hands. After the mixture is formed in the mortar take it out and put it on a clean piece of paper and use the spatula in working quick-setting alloy. Unless you have the amalgam very soft you stand a very poor chance of getting the minute particles of mercury out. It is not so much the mercury you put into an alloy as how much you remove that makes a good filling.

In regard to the use of gold, I will say that gold has a great affinity for amalgam, but at the same time it does not form a hard amalgam. As I said in the paper, you should frequently take away the soft material from the top of your filling. In that way you will have a filling as hard on the top as at the bottom.

REPORT OF THE INDIANA STATE BOARD OF DENTAL EXAMINERS.

To the Indiana State Dental Association:

Gentlemen—Conforming to Section 28 of the Indiana Dental Law, the Indiana State Board of Dental Examiners has the honor to submit the following report of its proceedings for the year ending October 31, 1905:

Three meetings of the board were held during the year in the state house at Indianapolis; the regular sessions of January and June and a special meeting, May 1st, for the examination of the graduating students of the Indiana Dental College.

During the year, 92 certificates of registration were issued to successful applicants before the board. There have also been issued 11 temporary permits to candidates for examination whose applications were filed with the secretary prior to a meeting of the board, five of which are now in force, and will expire on January 9th, 1906, at which time the holders thereof will appear before the board for examination.

On December 9, 1905, Dr. D. L. Stine, of Indianapolis, then secretary of the board, died at St. Vincent's hospital, and Dr. Alex. Jameson, of Indianapolis was appointed by Governor W. T. Durbin to fill out his unexpired term. At the regular meeting of the board in January, Dr. F. R. Henshaw, of Middletown, was chosen secretary-treasurer.

In June, 1905, the following appointments were made: By the governor, W. H. Shaffer, North Manchester; by the State Board of Health, M. M. Haas, Evansville; by the Indiana State Dental Association, Alex. Jameson, Indianapolis, J. S. McCurdy, Ft. Wayne, and F. R. Henshaw, Middletown. At the organization of the board, following these appointments, M. M. Haas was elected president and F. R. Henshaw, secretary and treasurer.

During the year there have been six affidavits filed by the secretary against illegal practitioners. Three of the defendants left the state before prosecution could be had, one was convicted and fined and the papers in two of the cases are still in the hands of the prosecutors. Section 24 of the Dental Law, defining the practice of dentistry, is so meagre that it is extremely difficult to secure conviction in many cases.

The board, in accordance with the rules of the National Association of Dental Examiners, of which this board is a member, inspected the Indiana Dental College as to its equipment, matriculation of students and curriculum, and found it living up to the highest standards, a report to that effect having been made to the N. A. D. E.

This board now has an agreement with the Board of Dental Examiners of the State of New Jersey for the reciprocal interchange of licenses, according to the provisions of the "Asheville Resolution," the full text of which appeared in the last report of this board.

A similar agreement is now under consideration by the Michigan Board of Dental Examiners, having been already signed by the officers of this board. In this respect Indiana is in advance of the majority of the states of the Union.

We hope in the near future to be able to effect agreements along this line with a number of the states.

M. M. Haas, D. D. D., *President.*
F. R. Henshaw, *Secretary.*

SURGICAL OPERATION OF THE LABIUM FRENUM.*

BY T. G. BRADFORD, D. D. S., DALLAS, TEXAS.

Seldom is the opportunity offered the dental profession to affiliate with the medical profession as has been the privilege of members of the State Dental Association. We assure you that it is with much pleasure that we contribute our little mite to this learned body of professional gentlemen.

The subject selected is of especial interest to the dentist, who has ever undertaken such a case, and it is equally so to the general practitioner of medicine from a surgical standpoint. The attachment of the Labium Frenum muscle is from the upper lip to the gum tissue, just above and between the central incisors; its position is at the median line, and its removal surgically is indicated when its attachments are very low and when its peripheral fibers extend between the central incisors and attach to the gum tissue on the anterior palatine portion of the mouth just back and between the linguo-gingival ridge or cingulum of the central incisor. This attachment thus causing the separation of the central incisors, thereby resulting in the malocclusion of the teeth, and also an impediment in the speech, by the escapement of air between the teeth.

"Nature never corrects a deformity unaided," and if such a deformity is inherited it is intensified. In pathological and physiological conditions, if a cure is to be effected, the cause must be removed. It is an easy matter to draw these central incisors together, but it is very difficult to make them stay. Retaining appliances may remain on these teeth one to two years and longer and when they are removed, the teeth will assume their former abnormal position because the constant moving of the lip moves the muscle, which extends between the teeth.

---

* Read before the State Medical Association at Ft. Worth, April 23, 1906.

Now for the modus operandi: Bands of German silver, which is superior to any other metal for this work, on account of its durability, strength and lightness, are made for each central incisor, and spurs are soldered to the mesio-labial surface of each band at right angles; these spurs must be at the same distance from the incisal edge of the tooth; if not, when brass ligatures are applied to draw the teeth together, one of the teeth will elongate and be in supra-occlusion. If these spurs were soldered to the center of each band or to the distal, when pressure was applied there would be a rotation of the tooth in its socket, and an additional malocclusion would be established in trying to correct another. These bands are now ready for cementation; place bands in boiling H_2SO_4 and then water; remove and dry thoroughly, place cotton under the lip and dry the teeth, using alcohol and hot air; mix your cement very thin, and well spatulated to the consistency of thick cream, and then with spatula place the cement in the bands and press home, using a band driver to assist a more perfect adaptation of the band. Then burnish well the bands that they may fit accurately, and this will also prevent an accumulation of food. Dry thoroughly with hot air, and remove all excess of cement to prevent any future irritation of the tissue by the cement; dismiss your patient till next day, and then the cement shall have set sufficiently that pressure will not loosen the bands.

Now you are ready for the surgical part of the work; it is useless for me to even mention asepsis to the medical profession and to the dentist or physician who does not perform his operations antiseptically will be relegated to the past by his own acts, and is fossilized by a lack of education.

A general anesthetic is not indicated, and this operation is painlessly performed by a hypodermic injection of $\frac{1}{8}$ of 1% eucaine or the same amount of cocaine; don't use over a 1% solution of either of these anesthetics in any condition. I prefer the eucaine to all local anesthetics.

After the parts are anesthetized, use lancet to cut between the teeth, so that this will be a guide to you so that when the electric cautery is applied or an actual cautery you will not destroy any of the peridental membrane of either tooth. It is not necessary that any of the alveolar process should be destroyed, only the abnormal amount of muscular tissue should be removed between the teeth; the object of this cautery is that scar tissue is formed and it draws the proximal fibers together, and the cicatrix thus formed aids in retention. The cause of the separation of the centrals is removed, and nature does the rest.

Let the soreness subside and use annealed brass wire, 31 gauge, to encircle the spurs and twist the wire a little every third day and it will be but a short time until the space is closed. Never use rubber ligatures, as they make the teeth too sore on account of the continual pressure, and besides you cannot judge the amount of pressure that is applied in using rubber.

The lateral incisor will move proportionally with the centrals on account of the attachments of the fibers at the gingival third that attach from tooth to tooth; this work can be done painlessly in this manner.

At the same time a V-shaped part of the muscle should be cut out, and at visits of the patient the lip should be gently manipulated that the parts will not grow together and you force the attachment of the muscle higher on the alveolar process and also on the lip, so that in using the lip afterward in talking the fibers will not be moved that go between the teeth.

After the teeth are drawn together let them rest for a few weeks that all tenderness may disappear, then make bands for each central and solder these bands together at their incisal portion only. Then cement in the manner described before. These bands are to remain undisturbed in this position for at least a year or more; the time of retention depending upon the age of the patient and the occlusal contact of the teeth.

* * *

THE RELATIONSHIP OF DENTISTRY TO THE ALLIED PROFESSIONS.*

BY E. S. FARRIS, M. D., NEW CASTLE, INDIANA.

It has been far from an easy task for me to arrive at a conclusion as the choice of a subject which would likely prove a judicious or a congenial one upon which to address you at this time. My mind is not at all clear that I shall be able to offer you anything that will prove of the least interest and much less of instruction. To instruct, I shall make no attempt, but hope that I may not ingloriously fail in the former. I will inform you that I have succeeded in giving this effort a title, however much of a misfit it may be, or whether I shall again refer to it in what follows. The very comprehensive scope of the subject renders it impossible to treat the various phases in a technical way, as it would, in the first place, surpass the capability of the essayist, and, in the second place, would pass the limit of your long-suffering kindness. So, if you expect more than an exposition of common-place generalities, I refer you to your well-meaning, but misguided committee on program. I desire, in the first place, to make brief reference to the history of dentistry and medicine as ancient sciences, and try to show, in a more or less desultory way their relationship to each other.

The most complete history, in brief form that I have been able to secure, I obtained from the Universal Cyclopedia, and from it I will quote very liberally and almost literally.

The first historical reference to dentistry was made by Herodotus, about 484 years before Christ, who tells of the attention given to the teeth, as, also, the eye and ear in Egypt and Belzoni, and other writers claim to have found in Egyptian tombs, artificial teeth of ivory and wood, some of which were mounted upon gold plates. Teeth of mummies are said to have been found at Thebes, filled with gold and a white cement, but evidence is not positive as to this fact. In 1884, Dr. Van Merter of Florence, discovered in a museum at Corrito, skulls which had been exhumed from Etruscan tombs, showing pure gold wire wound about natural teeth, with interspaces between them, indicating that artificial teeth had been thus held in place.

---

* Read before the Eastern Indiana Dental Association, New Castle, Ind., May, 1906.

"As the Etruscans preceded the Romans in occupying the land now known as Italy, the antiquity of this form of dentistry is well established." "As to the extent to which the Greeks or Egyptians practiced dentistry as a specialty before the Christian era, there is no definite information. The only writings of ancient times extant where dentistry is spoken of as an art are those of Galen, second century after Christ. From Galen, until Ambroise Parè published his celebrated work on surgery in 1550, but little was added to dental literature."

As to later history: "During the 18th century, dentistry became a subject of more critical inquiry and thorough investigation. Men of intelligence and education devoted themselves to it exclusively, and as a result, its advancement in both literary and scientific directions during the 19th century has been most marked." "From 1800 to 1892, there were published in America and Europe, some 200 volumes pertaining to the subject — on the care of the teeth and diseases of the same, in addition to manifold monographs." "Among the list of European authors, the one who figures most largely, perhaps, in the early history of American dentistry, was the French Le Maire, while the authors of the United States with whom you are most familiar, are Gardette, Koecker, Harris, Taft, Garrettson, Black and Miller." "Perhaps the first dentist in the United States of whom there is any account, was the Le Maire referred to above, who accompanied the French army which aided in the revolution, to be soon followed by an English dentist by the name of Whitlock."

"John Greenwood, who began to practice in New York about 1788, is believed to have been the first native American dentist. In 1790 and in 1795, he constructed an entire denture for George Washington."

"The first dental college in the United States was chartered by the legislature of Maryland in 1839, with the title of the Baltimore College of Dental Surgery." This seems to have antedated the first specially organized college of dentistry in England by nineteen years, when a dental department was instituted by the College of Surgery of England. Be it said to the credit of the profession in the United States, that it far surpasses that of Europe in the number of schools, periodicals and societies, and does she not in everything that is good and desirable? The subsequent history of dentistry is simply a matter of your own time and history, and these preliminary remarks are only made to refresh some minds and to inform others of the glorious antiquity of your profession.

The antiquity of Medicine:—"Among the earliest records of authenticity are, perhaps, the Scriptures, from which are gathered a fair notion of Egyptian knowledge and practice. Here we read that Joseph commanded his servants and physicians to embalm him, this being about 1700 years before Christ." The probably mythical being whom the Egyptians called Thoth, the Greeks, Hermes and the Latins, Mercury, passed among the former as the inventor of all the sciences and arts. To him are attributed an enormous number of writings on all subjects. Some have considered him as identical with Bacchus, Zoroaster, Osiris, Isis, Serapis, Apollo, and even Shem, the son of Noah. It is now almost certain that the books attributed to Hermes were not the work of any one hand or of any one age. The last six volumes of the 42 composing this encyclopedia, refer to medicine, and embrace a body of doctrines fairly complete and well arranged. Of these six, the first treats of anatomy; the second, of diseases; the third, of instruments; the fourth, of remedies; the fifth, of diseases of the eye; and the sixth, of diseases of women. In completeness and arrangement it is said to rival, if not surpass, the Hippocratic collection, which succeeded it by a thousand years."

"Hebrew medicine is known generally through the writings attributed to Moses, which embraced rules of the highest sagacity, especially in public hygiene. The book of Leviticus is largely devoted to matters of public health."

"The antiquity of the Chinese is simply lost in tradition and fable. They attribute the invention of medicine to one of their emperors named Hwangti, who was the third of the first dynasty, and whose supposititious date was 2687 B. C."

But I cannot tarry longer here. If one wishes to read a most happy and thorough exposition of early medicine and surgery from the remote and mythical ages of antiquity down, I would refer him to "An Epitome of the History of Medicine," by Dr. Roswell Park, from which I quoted the above quite literally, and which I found most instructive and entertaining. Early medicine, shrouded in mysticism, ignorance and superstition, advanced many theories which are held worthy of observation in practice, even to this day. But, in the main, the art at that time was of a most crude nature, the methods in vogue, in the main, being not materially different from the exorcisms, fetiches and charms of the unenlightened present-day savage, and this was not to be wondered at, as the right to practice the healing art was confiscated by the ignorant and superstitious priesthood of the Levitican period.

Lack of time warns me that we can go no further into the history of these subjects. We will, therefore, consider briefly a few things that contribute to the intimate connection between, and the interdependence of dentistry, medicine and surgery.

Previously to the acknowledgement of the true character of dentistry, it was, as you know, practiced in a desultory and indiscriminate way by no especial class of people, after the subjugation of the priesthood, filling of teeth being largely in the hands of the jeweler and goldsmith, and extracting was practiced largely by the blacksmith and barber, the latter of whom cut no small figure in practicing the art of healing. By the natural evolution of events, however, matters pertaining to these various departments have arrived at their present comparatively perfect condition of adjustment, and with the result of approaching, also, the present high standard of magnificent attainment of usefulness to mankind.

Again, our professions are all progressive ones, and contribute, the one to the other, in the manifold essentials, to the broadest acquirement of the knowledge so necessary to render us the most distinguished in wisdom, and the most useful to our generation.

The medical world must bow in acknowledgment to the dental profession for the unapproachable gift to it, and to the world at large, of the greatest boon to suffering humanity that it has ever been its fortune to receive. It is unnecessary to say that I refer to the discovery of surgical anæsthesia. It is not the purpose to more than refer to the fact that agents were known and made use of ages ago by the Egyptians, Chinese and others, and taken by the mouth, for the purpose of producing effects akin to the anæsthetic state, but will dwell a little more on those used by inhalation for the production of surgical rest.

There is reason to believe that the anæsthetic property of ether was not unknown to the alchemists of the 16th century, who were its discoverers. Also, that Sir Humphrey Davy, in 1800, observed the anæsthetic effect of nitrous oxide, and proposed its use in surgery, but it was not until 1844, that Horace

Wells, (a dentist), of Hartford, Conn., made its application practical, by successfully employing it for the painless extraction of teeth.

Between 1816 and 1846, several American physicians proposed the use of ether as an anæsthetic. But it again remained for Dr. W. T. G. Morton, a dentist of Boston, (who had already used it successfully in dentistry), to administer it at the Massachusetts General Hospital during a surgical operation by Dr. Warren. This places medicine under a double tie of obligation to dentistry for the greatest boon conferred upon the human race to the present time, for which due credit is given with pleasure. One year later, in 1847, Sir J. Y. Simpson, of Edinburgh, Scotland, first announced chloroform as an anæsthetic agent, and since this time, many agents of a similar nature have been brought into notice and use, but those mentioned have held the field with the possible exception of ethyl chloride which is now being extensively exploited as an anæsthetic for short operations.

Again, the world, including dentistry, is indebted, likewise, to medicine for manifold great and important discoveries. I will barely allude to the discovery of the circulation of the blood by Harvey, 1578-1639; the isolation of the cinchona alkaloids; the inoculation against smallpox; the discovery of the germ theory of disease, this succeeded, as a natural sequence, by the discovery of the principles of antisepticism; and again, the very important and valuable institution of serum therapy. Of scarce less importance, if at all less important than general anæsthesia is the evolution of the agents used in the production of superficial or even deep analgesia, the most important of which is, of course, cocaine and its synthetically allied alkaloids. With this agent, and its scarcely less valuable co-worker, adrenalin, what an armament is placed at the disposal of the present-day dentist and surgeon, for the prevention of surgical pain, and the general salvage of human suffering and even human life. In your case, and that of the oculist and rhinologist, especially, it, in the large majority of cases, estops the necessity of submitting the patient to what seems to them as a passage "through the Valley of the Shadow of Death."

Another phase of the question which closely allies the profession of dentistry with those of medicine and surgery is the fundamental education of a similar character required by both. It is necessary that the anatomical knowledge required of you is the same as that which is most useful likewise to the oculist, the aurist, the rhinologist and the surgeon of the brain. It is required of you that you have a special knowledge of the anatomy above the clavicle. So, you will readily follow me when I present a few rough allusions to it in a way which best suits my present purpose. The skull presents an aggregation of orifices and intercommunicating cavities and cellular spaces. Of the orifices, the mouth is, of course, the most conspicuous. This orifice contains the receptacles for the teeth, the maxillae presenting the spongy alveoli and root cavities, always closely associated by contiguity and sometimes by continuity with the floor of the maxillary antrum. This antrum, by the maxillary ostia, communicates with the nasal cavities; the latter, by direct continuity, associates with the orbit through the nasal duct and lachrimal sac; with the ethmoidal cells and through them and the cribriform plate, with the cavity of the skull; by way of the infundibulum and fronto-nasal duct, with the frontal sinus; posteriorly, with the sphenoidal sinus; by the Eustachian tube with the middle ear, and, finally, by way of cellular communication, with the cells of the mastoid. All of these structures are covered or lined with some modification of the same mucous membrane, which is, likewise, innervated by a complex system of closely associated nerves belonging to the cranial system.

These we will, likewise review briefly, only so far as they are associated with our subject. These consist of the olfactory, the first cranial nerve, whose distribution is to the Schneiderian membrane of the nose; the second, or optic, distributed to the retina; the fifth, or trigeminus, the nerve responsible for the most of the dentist's woes, distributed to the skin, structures of the face, tongue and teeth; this nerve divides into the superior and inferior maxillary and the ophthalmic branches, the ophthalmic being subdivided into the lachrimal and nasal. Next in order, as we will refer to them, is the seventh, or facial, distributed to the face, ear, palate and tongue, with its temporo-facial branches; the ninth, or glosso-pharyngeal, distributed to the tongue, middle ear, tonsils and pharynx; the tenth, or pneumogastric, distributed to the ear, pharynx, larynx, heart, lungs, esophagus, etc., with its superior and inferior laryngeal branches, and its more remote association with the great sympatetic; the eleventh, or spinal accessory, distributed to the sterno-cleidomastoid and trapezius muscles; and the twelfth, or hypoglossal, distributed to the hyo-glossus and hyoid muscles. These nerves, with one or two exceptions, emanate from the floor of the fourth ventricle or the medulla in close proximity to it, and are, as a consequence, in the most sympathetic relationship to each other.

Many inflammatory diseases of the eye are due to reflex causes, not a few of which are from the teeth, and these are brought about in most instances, perhaps, through the agency of the fifth nerve. Dental affections provoke ocular diseases:

First: By inflammation or irritation of the trigeminal, due to some dental disturbance, causing a reflex affection similar to that in tic.

Second: By the extension of inflammatory process of a dental root to the maxillary antrum, thence to the orbit and other accessory cavities by continuity. I would also add,

Third: Systemic infection, and metastatic processes growing out of the same. The most frequent manifestations of reflex ocular disturbance are pain and pronounced injection of the conjunctiva, accompanied by tearing from hypersecretion. The same condition pertains to the mucous membrane of the nose and the nerves distributed thereto. The pain in the nose is usually of the same stinging, burning or boring character as that which distinguishes tic, with more or less watery secretion.

In children, dental irritation is a not infrequent complicating factor in keratitis and phlyctenular conjunctivitis, brought about, no doubt, by irritation of the fifth nerve, the above conditions being caused largely by nutritional disturbance, the result of enervation.

"Schmidt, who has, perhaps, given the most study to the subject of paresis of accommodation in the eye, following dental affections, states that in 92 cases of dental disease observed by him, the magnitude of accommodation was 73 times less than that encountered at the same age by other observers, especially Donders." The disappearance of the dental affection induced coincident disappearance of the paresis of accommodation. The natural amplitude of accommodation being greater in young people, the disturbance is relatively greater, also. This accommodative disturbance is usually greater on the diseased side.

Many theories have been advanced as to the causation of this condition, but, to my mind, the effect comes about in one of two ways: either it is due to a relaxation of the ciliary muscle from disturbance of innervation, or there ensues an hyperaesthesia of the nerves of the eye, rendering the operation of the accommodative muscles of the eye a painful precedure — hence an avoided one.

It is a moot question as to how irritation of a sensory nerve may diminish or even suppress the action of a motor nerve, but it is beyond controversy that it frequently does; and when you come to consider the origin and distribution of the cranial nerves, and the intimate warping and intermingling of the fibers, sensory, motor and special sense, of many of these nerves, the reason, it seems to me, is not far to seek, whatever the explanation may be.

There are cases on record where irritation of the trigeminus has given rise to increase of ocular tension, and induced attacks of acute glaucoma in persons predisposed to neuralgia.

Children predisposed to toothache quite frequently develop chorea, the movements being confined to the distribution of the trigeminal.

Your worthy president, Dr. White, called my attention, a short time ago, to the case of a young lady, who, last May, suffered a profound shock to the nervous system from a stroke of lightning, which produced instantaneous and total blindness in the right eye, together with other pronounced conditions in the nervous system and the muscles of the face, jaws and teeth. In December last, he had occasion to extract a right upper bicuspid for this patient, when she was, at once, able to distinguish light with the affected eye. I made further inquiry of a physician who had the case under observation at the time of the original injury. He saw her quite recently, and says that she is now able to make out the forms of objects, and that the eye seems to be steadily improving. Through the courtesy of this physician, I was permitted to see the lady a few days ago, and found unmistakable evidence of an extensive burning out of the retina by the flash of lightning, as there was a marked condition of atrophy in the macular region, and the patient has recovered about as much as she will. This suggestion of Dr. White led me to investigate the literature of this phase of the subject more thoroughly than I had heretofore done, and I was surprised to find reported by a large number of authorities statements of the fact that many cases are on record of amblyopia and even amaurosis caused by dental irritations and carious processes in the mouth, which completely disappeared upon the removal of the offending cause. These conditions, accompanied by a typical form of contracted field of vision, are mostly explained by reflex constrictions of the vessels of the retina, producing temporary nutritional disturbances of that organ. When you come to remember the association of the fibers, motor, sensory and special, of the 5th, 7th, 8th, 9th, 10th, 11th, and 12th nerves originating in so close proximity to each other, the manifold reflex disturbances, special motor and sensory, as to organs of taste, mastication, deglutition, and, through the sympathetic, of digestion, assimilation, respiration and circulation, are not difficult of contemplation.

We have devoted our chief attention, thus far, to the manifestation developed in the nervous system. Let us now pay a little attention to the results growing out of the extension of inflammatory disturbances, and following the short reference to relational anatomy, it is very easy to follow. The largest number of sinus and allied troubles, as pertains to dentistry, you will agree, are the outgrowth of inflammatory, carious, or purulent processes in the upper maxilla, adjacent to the floor of the maxillary antrum. Whether the trouble be primarily inflammatory, or immediately infectious, the antrum being poorly provided with drainage, the possible consequence is the same — either the development of a mucocele, or of a pus-secreting membrane, or of a cavity lined with a macerated and degenerated membrane, covered with fungoid granulations or polypoid new growths, sometimes filling the cavity to the extent of producing facial deformity or setting up a necrotic process. Then, indeed, how readily may we have similar conditions arising in the nasal cavities, through the ostia maxillare, then of the ethmoidal cells, of the frontal or sphenoidal sinuses, of the lachrimal sac or even the orbital contents by way of the nasal duct. Even should Nature, before processes below become infective, kindly occlude the nasal duct, the latter end is not much better than the former, as the sac is robbed of its drainage, and it is a question of but a short time until a purulent process is set up therein, producing one of the most perplexing conditions with which the oculist has to deal, and, if unsuccessfully, leaving a condition which is a constant menace to the eye itself. More far-fetched, but quite possible, is the extension of an infectious process by way of the orbit and optic tract, or, more likely, by the ethmoidal cells and cribriform plate to the cranial cavity, developing a septic meningitis, pachymeningitis or cerebral abscess, with fatal termination.

Infectious processes in the mouth, whether from an apparently insignificant fistula, caries, a pyorrhoea alveolaris, or what not, may, and very frequently do produce damaging or destructive processes by way of the Eustachian tube in the middle ear, mastoid process, and ultimately of the sigmoid sinus and cerebral or cerebellar cavities; or, a purulent phlebitis of the internal jugular vein, with deep, dissecting abscesses in the neck. Again, we will note the possible occurrence of direct systemic infection from diseased conditions in the mouth. Although free drainage, established early, renders such danger more remote, nevertheless, if this should be neglected or delayed, such general infection might reasonably arise, with the possibility of dire consequences, such as metastases to neighboring or remote glandular structures, with abscess formation in the same, or to the bronchial glands or the intima of the lungs, causing structural breakdown, metastatic pneumonia, etc., or the infection may so poison the nerve centers as to speedily overwhelm the individual.

I would call your attention to your daily observation of dental conditions productive of disease. You daily observe cases where the function of mastication is seriously interfered with on account of paucity of teeth, or anatomical deformities of the maxillae, interfering with proper articulation, or painful conditions caused by caries, abrasions, inflammatory and suppurative conditions. As a result of the infectious conditions, arise the development of pathogenic bacteria, interfering with, or perverting the chemic processes of digestion, and so leading to states of malnutrition, and thus rendering the physical more vulnerable to a multitude of external foes.

I will barely mention that there are a few diseases bearing on dentistry equally with the other departments of medicine, as, for instance, syphilis, rachitis, tuberculosis, rheumatism, impaired metabolism, pyaemia, consanguinity and hemophilia.

So, we must finally arrive at the inevitable conclusion that the professions cited are so intimately interwoven in their relationship to and interdependence upon each other, that it were very difficult or impossible to draw a sharp line of demarkation as to where the duties and responsibilities of one begins and the other terminates. This line is much the most discernible to the man of quick perception and large intuition, or the one correspondingly broad by virtue of the large forced attainment, which comes by untiring, persistent effort. The general physician who fails to put into action every faculty of which he is possessed in most exhaustively searching out every condition, in every patient, contributing directly or remotely to the case in hand, is unworthy of his exalted title, and is a stumbling-block to the welfare of those innocently or ignorantly entrusting themselves to his care. This discerning, and consequently, broad-minded physician will readily determine whether or not some dental condition is at the bottom of an abnormal state in the digestive organs and conditions of mal-nutrition and emaciation; he will search the mouth for a cause for many an obscure reflex pain, such as a tic or a pain in the eye or ear or painful deglutition, etc. This physician will be no less prepared to make, at least a cursory examination of the nasal cavities, a post-nasal space, a drum-head or a marked error of refraction, and exhibit sufficient broad-mindedness and sufficient interest in the weal of his patient to refer him where he can secure the most speedy and efficient relief for him. This character of physician is, lamentably, not as much in evidence as he should be. There is too much of a tendency on the part of the profession to regard the general practitioner as the "salt of the earth," and the essence of all that is perfect, and to regard in too sneering a way the motive of the one who attempts to so limit his sphere of action as to be of the most skilled service to his fellow, though in a more limited way. True, if the physician should make reference of cases which his best judgment indicates should be referred, there would be less of converting the digestive organs of his people into chemical laboratories; there would be a less necessity of depleting the intestinal muscularis with prostrating cathartics; there would be a less demand for loading the intestinal tract and poisoning the nervous system, and locking up the secretions by active astringents and opiate mixtures, and hence a feebler call for intestinal antisepsis; there would be less of a tendency to dose people suffering from painful conditions of the face, ears, eyes or teeth, or the persistent sufferer from migraine with drugs tending to paralyze the nerve centers, vitiate the blood and weaken the heart. In spite of the tendency on the part of many to taboo the specializing in the different departments of practice, the tendency in that direction is growing, and will continue to do so. This is as it should be, for it is not in the province of any man's capability to become a past master in all the departments of practice. If a general practitioner is strong in one sphere of work, he is relatively weak in some other, as I call your own observation to witness. You, as representatives of the dental branch of the profession, know that acquiring a knowledge of your stipend of the work, keeping abreast of the rapid advance taking place in mechanics and therapeutics, keeping up with your special periodical literature, while endeavoring to do good, conscientious work, leaves you no reserve of time or capacity for the thorough mastery of other problems of like magnitude. I am free to acknowledge that there are entirely too many neophites who are practicing along special lines, more especially as pertains to the eye, ear, nose, throat, and special surgery. There are entirely too many fledgelings who immediately after leaving the nest of Alma Mater, immediately take a 6- or 8-weeks' "post" course, and in their own self-conceit conclude that they are adepts in their profession. In my judgment, such a course is open to the most strenuous condemnation, as it contributes more than any one thing, to bring specialism into disrepute. With training, however thorough, yet largely of a theoretical nature, not having had the opportunity of rubbing up against the stern practicalities necessary to the evolution of a well-rounded man of general experience, he is necessarily dwarfish and narrow, and too much inclined to look at every case with which he comes in contact through the spectacles of specialism. The true physician, when he comes in contact of middle ear trouble with which he is not prepared to combat, will not jeopardize that patient's future peace of mind and possibly his chance of life by a do-nothing policy, but will preferably refer such a case to one who is capable of properly diagnosing and treating the condition; likewise, when he has a case migraine or fronto-temporal headache which he cannot attribute to an organic cause or auto-intoxication, and which steadily baffles his every attempt to relieve, he refers it to one capable of unearthing and correcting a refractive or muscular error; and, as before stated, a disturbance of almost any kind in the alimentary tract would at once suggest to him an exploration of the teeth, with any necessary reference to the dentist. It is just as essential that the dentist should be a man of large observation and keen judgment. Aside from his stereotyped line of work, he should be observant as to any complicating conditions, such as antrum, sinus, orbital and middle ear troubles. Having done so, his knowledge and self-confidence will indicate to him where to proceed and where to invite co-operation. Many dentists — and I really think that it is as much the dentist's province as any one's—pursue an infective process beginning in the maxilla extending into the antrum, and to the best interest of the patient, as he is usually best situated to recognize the trouble at a time most important for its speedy relief. Apropos of this, I think that every dentist should be equipped with proper means of diagnosing this condition, this to consist of trans-illuminating apparatus, head mirror and nasal speculum. Beyond the invasion of the antrum, I suppose the dentist would hardly have the temerity to go, except in operations, possibly for hare-lip and cleft palate. The oculist, aurist and rhinologist, I think, seldom fail to look to the teeth, not only for evidence of the presence of syphilis, but to determine the presence of any complicating condition. If the specialist be the man of the wide information that he should, he is quick to recognize any underlying dyscrasia that demands attention, and refer the case to the proper source of relief.

There remains much for future accomplishment along the line of general co-operation in the professions. The first vital defect to be overcome is that of selfishness. We need to cultivate a broad and deep feeling of sympathy and helpfulness for each other, and dissipate the submerging spirit of competition and commercialism and envy which now pertains to too marked a degree. We must put aside the attribute of His Satanic Majesty which causes a man to greet his professional brother with a smile, and sneakingly plunge the dagger into his back; the spirit that influences one to remark that Dr. So-and-so is a very well informed man, but "thus and so" — damning him by faint praise.

I regard it as another very important thing, that every professional man, instead of resting on the oars of his early acquirement and floating on the tide, should bend every energy toward the development of his every power, and so render himself undeniably worthy of the trust of his fellow-practitioner and his fellow-man. We are all dependents; we are dependent on our friends and neighbors in our community, and we are dependent on each other; and I am optimistic enough to believe that the dawn of the day is approaching when this truth will be more generally recognized; when envy and jealousy will be no more; "when swords shall be beaten into plough-shares, and spears into pruning-hooks;" and when the mantle of charity and mutual helpfulness shall encompass our noble professions "as the waters cover the sea."

SUGGESTIONS

A NEW ROOT-END PREPARATION FOR A PORCELAIN CROWN.

Dr. M. C. Tracy, New York.

The root is beveled toward the labial and palatal surfaces, and also at the approximal edges, leaving a narrow floor at the center of the root. The foundation is swaged in No. 30 gauge platinum. This forms a seat of great strength upon which to construct the crown. The post is made of iridio-platinum wire and is allowed to extend below the floor for the attachment of the facing. The crown is contoured with any of the high-fusing bodies and finished with low-fusing porcelain.—*Dental Cosmos.*

A SIMPLE METHOD OF MAKING A TWO-PIECE GOLD CROWN.

Grind the tooth the same as for any cap except that on the masticating surface only sufficient tooth-substance should be ground off to allow for a thickness of No. 20 gauge plate. After the band is fitted on the tooth, insert into the protruding end a piece of warm modeling composition and press it in firmly with the fingers. Remove the band and the composition, fill the band with plaster, and after the plaster is thoroughly hard wait several hours before removing the composition by first warming it. Then fit to the end of the band on the plaster tooth a very thin piece of platinum, and with a pocket-knife cut little slits all around the edge of the band down to the platinum. Bend the cut edges over the plate, flow enough 18-k. or 20-k. solder over the platinum to build up to the occluding tooth, and finish according to individual preference. This method is for use in close-bite cases and on teeth with living pulps.—*Dental Cosmos.*

A METHOD FOR INVESTING AND PACKING A RUBBER DENTURE.

Dr. H. S. Miller, Rochester.

The impression and cast is obtained in the usual way. The teeth are then set up on the wax plate and properly articulated. A wax trial plate is made approximating the form desired for the completed denture. The wax plate is then placed on the model and invested in the lower part of the flask as low as the model will permit. The teeth are covered over their cutting or grinding surfaces with plaster as thick as the flask will permit. The investment is then beveled in order to facilitate the removal of the upper portion of the flask. The investment is then varnished and the upper portion of the flask placed in position and filled with plaster. The flask is next warmed and separated and the wax removed. No gates are cut in the cast except one at the rear. The clinician claims that in this way the teeth are held firmly and the articulation is kept perfect no matter how the flask is closed. No rubber is wasted, as the operator sees just how much rubber is required, and in using pink rubber it is readily placed where needed, and there need be no fear of its being penetrated by rubber of a different color. This method requires a flask broad anteriorly and extra deep to allow for a sufficient backing of plaster.—*Dental Cosmos.*

INLAYS IN POSTERIOR TEETH.

G. C. Marlow, Lancaster, Wis.

Ordinarily I make two appointments with my patient when an inlay is to be inserted. The first appointment I prepare the cavity and make the matrix; the second appointment I have the inlay ready to set. I adjust the rubber dam, and after washing out the cavity with alcohol and thoroughly drying it with *hot air* I set the inlay under pressure by wedging, if it is a proximal filling. If a crown, buccal or lingual filling, I get my pressure by use of strong rubber bands, or by holding the end of a suitable instrument, or piece of wood against the inlay for about 10 minutes. After trimming away the surplus cement I coat it over with a little sticky wax to keep the moisture away until the cement is thoroughly set and remove the rubber dam. The whole operation of setting should not take over 15 minutes.—*Dental Review.*

WORN MANDRELS.

A. C. Willman, Kankakee, Ill.

If a mandrel becomes so rusted or worn that the screw no longer holds, a light blow with a hammer will flatten the hole slightly and cause the threads to hold as good as ever.—*Dental Review.*

RESTORING BROKEN CROWN FACINGS.

Dr. W. G. L. Spaulding.

In doing this by any method, three points are exceedingly important:

(*a*) To fit the facing to the backing so as to avoid crevices and projecting edges.

(*b*) To avoid weakening of gold backing or of the dowel.

(*c*) To secure facing so that it will not loosen.

Procedure.—Grind or clip the pins of the late facing flush with backing. With a lubricated drill make holes through the backing to suit the pins of new facing. This preparation guides the facing true to place, which will be of service during the grinding to fit backing. Use thin carbon paper for fine adjustment of facing. Bend ends of pins to form loops and invest to unite them with gold or silver solder. While investment dries and heats, finish the preparation of the backing. A U-shaped slot is cut with small dental fissure-burr, starting in the pin-holes already made and thus making a tongue around which the loop of facing will fit. A pear-shaped or round burr, not too sharp, will cut away enough of the tongue from palatal side to allow the loop to go to place. Lubricate the burr with vaseline or glycerine.

Having soldered the pins of facing it will be cool enough now to try in place for fine adjustment. Cement facing to place, holding a piece of unvulcanized rubber against the palatal aperture to prevent the cement forcing through. A small ball of soft amalgam at hand quickly closes the aperture in backing and keeps the loop immovable.

Advantages of the Method.—Security of facing, accurate adjustment, and an unweakened dowel in the crown.—*Dominion Dental Journal.*

HOW TO APPLY TOPICAL REMEDIES.

In applying topical remedies to sensitive cavities care should be taken to have them heated sufficiently to prevent any shock or pain.—*W. G. E., in Dentists' Magazine.*

STRENGTH OF TINCTURE OF ACONITE.

J. P. Buckley, Chicago.

The most important change in the strength of tinctures is that of Tinctura Aconiti (tincture of aconite). This preparation in U. S. P. of 1890 was directed to be 35 per cent. In the U. S. P. of 1900 it has been reduced to 10 per cent. It is well to keep this change in mind, for tincture of aconite is an important constituent in liniments used in the local treatment of many diseased dental conditions, especially pericementitis and facial neuralgia.—*Dentists' Magazine.*

EXPERIMENTS AS TO THE EFFECT OF PUMICE ON TOOTH STRUCTURE.

Joseph Head, Philadelphia.

Making any allowance for error, my experiments seem to conclusively prove that Methuselah could have brushed his enamel twice or even four times a day for his whole life without giving it anything more than a brilliant polish.

However, when we come to the effect of pumice on the neck of the teeth where recession has exposed the cementum, we have a startlingly different result. A one per cent. pumice and precipitated chalk mixture run against the neck of a molar by a two-inch brush wheel for four minutes, at 2,600 revolutions to the minute, makes a decided groove with a smooth surface not unlike the so-called chemical erosion found in the mouth. The same experiment tried with pure precipitated French chalk gives a similar groove. The same experiment tried with calox gives a similar groove. The same experiment tried with powdered carbonate of magnesia appears to make no perceptible impression; while running the clean, wet bristles of a two-inch brush over the cementum for seven minutes does not seem to do otherwise than give a polish without tendency to abrasion.—*Dentists' Magazine.*

EDITORIAL

THE NEW PROCESS MAN AND THE GULLIBLE DENTIST.

We desire to sound a note of warning to our readers regarding the sale of worthless diplomas and questionable new and secret methods in dentistry. Some weeks ago Dr. W. N. Hedback, Cumberland, Wis., forwarded to the editor a pamphlet from the Alveolar College of Dental Surgery, Galveston, Tex., J. Hod Williams, M. D., D. D. S., dean.

This little pamphlet first refers to the advantage of the alveolus, and then describes "just what the alveolus is," as follows:

> "As the name implies, it is a partial or full restoration attached to either the superior or inferior maxillary bones.
>
> "It may be divided into three divisions:
>
> "1. The Complete Alveolus—Where any portion of the mouth is restored without resorting to the use of abutments—a case that would ordinarily call for a full denture, i. e., no teeth in the mouth and the process absorbed.
>
> "2. The Partial Alveolus—Cases of long swings, say from right cuspid to a left molar, where the alveolar process is used with one or more teeth assisting.
>
> "3. The Simple Alveolus—Designed to replace the old-style bridge, where the process is used simply as a floor to obtain perfect sanitation.
>
> "This is very easily applied, and while less valuable than the preceding two classes, is probably in most general use."

Now, if the reader can tell from this description "just what the alveolus is" he must be a mind-reader. The pamphlet then gives a "history of the alveolus," as follows:

> "A French surgeon in replacing with a gold plate a section carried away by a gunshot, suggested to a young American, Dr. Evens, that he might just as well add teeth to the restoration.

"This was the first known alveolus; but its surgical relations made it impractical for the dental practitioner. From this operation, however, the simple alveolus sprang.

"Dr. Evens had patients from all parts of the world and all walks of life for this class of work. He rapidly became many times a millionaire and stood as a central figure in the dental world. Our Dr. Williams was personally acquainted with Dr. Evens, and absorbed many valuable methods and ideas from this wonderful man. Dr. Williams appreciating the value of this work, came to America and established "The Alveolar School of Dental Surgery," etc.

After stating how much some city "fake advertisers" had made in a single year, showing, as the circular states, "that the people are demanding a higher grade of work than the plate and bridge," and how this school's publicity department will give so many insertions of an advertisement, in home and vicinity papers, free of cost to the purchaser of the system, etc., the pamphlet refers to the degrees conferred in the following words:

"By virtue of the power vested in us by the sovereign state of Texas, we confer the degrees of D. D. S., D. M. D., or D. A. S. (Doctor of Alveolar Surgery) upon the satisfactory completion of our courses. Our Diploma is 20x30¾ inches, on sheepskin parchment, and of stone engravure, and is the best that money can buy."

Reference is then made to fees, then follows the statement:

"For further information and any questions address today, Alveolus College of Dental Surgery, chartered and incorporated by the state of Texas, and operating under its jurisprudence and inspection, Galveston, Tex."

At the suggestion of the editor, Dr. Hedback wrote to the college asking, among other questions:

1. How long a time will the entire course of instruction take?

2. Could it be obtained quicker by going to Galveston and attending the college?

3. I have an uncle who has never had a regular college course, and he wants to know if one could get the D. D. S. degree and diploma by mail?

The reply of Dr. J. Hod Williams, dean, was as follows:

"Dear Doctor Hedback—Yours of the 26th has been forwarded me for reply. I am at present on a lecture tour through the south with the idea of explaining the alv—to a few men to introduce, and then the rest of the profession must come to us.

I need a few weeks' rest very much, and should you care to forward me a ticket to your city and return to Nashville (my next town), and $50 in cash (approx. expenses), I will come to your city on a little vacation and thoroughly explain and demonstrate to you and give you the right to use patents, and copyrights and teeth. Your letter should reach me on or before the 15th day of this month.

In reference to your uncle—either he would have to come to Galveston or I go up to him, as our charter provides a "personal confering." Perhaps you can get him to whack up with you.

His degree would cost him $100, and would give him the right to the alveolus, etc."

No answer was given to questions 1 and 2.

Regarding the existence and legality of the Alveolar College of Dental Surgery, the editor then wrote to a prominent dentist in Austin, and also one in Galveston. Their replies were as follows:

"Dr. L. P. Bethel, Columbus, O.:

"Dear Doctor—Your letter making inquiry concerning the so-called "Alveolar College of Dental Surgery" came duly to hand, and in reply will say that our secretary of state, after due examination, assures me that there is no such organization in existence under charter or incorporation from the state of Texas.

"Our Texas laws would not permit the existence of such an institution, I can assure you. I will refer your letter to our State Board of Dental Examiners, and I feel that I can also assure you that Mr. J. Hod Williams will soon cease to send his circulars from Galveston if they get on his trail. If I can be of any further service to you in this or any other matter, I hope you will not hesitate to command me.

"Yours very truly,

Austin, Texas. "——— —————."

"Dr. L. P. Bethel, Columbus, O.:

"Dear Doctor—Your inquiry received this morning. In reply will say that the party you refer to is undoubtedly a fraud.

"Upon receiving your communication this morning, I went at once to see the postmaster and I found out that this man was only a transient and left a few days ago for New Orleans, and is having his mail forwarded to that city.

"If I can be of further assistance to you in any way, do not hesitate to call on me.

"Sincerely,

"——— —————."

Galveston, Texas.

We have not been able to ascertain where Mr. J. Hod Williams went from New Orleans, but if he has succeeded in extorting money from any members of the dental profession he is probably still fishing for "gullible dentists."

For some reason dentists in general are looked upon as "easy catches" by men who have marvellous (?) processes and inventions to sell or lease, and in the past many have fallen victims to these grafters. An air of mystery always surrounds their *great discoveries*, and their fee is exacted before the dentist knows what he is going to get, and *sworn secrecy* is one of the conditions of the contract.

Nine-tenths out of ten of the methods do not amount to much or are soon published in some of the many dental journals if they are worthy.

This reminds us of an instance that occurred some years ago, the suggestion of the pressure anæsthesia method, by a Canadian dentist. Hundreds of dentists paid twenty-five or fifty dollars for the "secret method," to a travelling solicitor who had stolen the idea from the original experimenter, only to find out afterwards that the method in full had already been published in a number of dental journals.

If dentists would refuse to pay their good money for these uncertain processes, and refuse to be sold into secrecy regarding them, the fakir grafter would cease to exist, but so long as this sort of thing is encouraged, just so long will the profession be pestered with the scheming grafter.

But to return to the subject under discussion. This man offers as an inducement to buy his process, a diploma, or if you do not want to purchase the process he will sell you the diploma and "throw in" the process and permits. But of what earthly use is a diploma from an institution without existence—an imaginary college? Such a diploma is worse than none, for it would receive no recognition anywhere, and the name of having *bought his diploma* is no credit to any dentist. What is this marvellous, mysterious, secret alveolar or alveolus process so flagrantly advertised in the columns of some of our city newspapers?

So far as we have been able to ascertain, they resort to implantation for abutments where no teeth exist (that is, if the patient can pay for it), for in these cases they say: "Oh, yes, we can do it, but it is very expensive; it will cost several thousand dollars for this style of alveolus. And this usually scares the patient out of purchasing an alveolus where no teeth exist in the jaw, and accepts a plate. Where there is a span, a modified saddle-bridge arrangement is used, and where teeth are loose from pyorrheal conditions, and possibly some of them missing, a permanent appliance, such as is in general use in dentistry teeth loosened by pyorrheal conditions, is made to bind the teeth together so they support each other. Such things which are not new, except in name, are what these grafters charge from three to five hundred dollars for where they can get it.

Don't be a gullible dentist, and you will be dollars ahead.

AFTERMATH

Minnesota State Examination.—Licenses to practice dentistry in Minnesota were granted to 53 candidates out of 64.

Married.—Dr. William Ross, a St. Louis dentist, and Miss Lilias Boyles, of Warrensburg, Mo., were married at Warrensburg, June 29.

Dental Society's Golden Jubilee.—The Michigan State Dental Association celebrated its fiftieth anniversary in July at Detroit, Mich.

New Publications.—The Teeth and Their Care, by T. F. Hiatt, D. D. S., an attractive little volume of 43 pages, containing useful information on this subject.

Virginia State Board of Dental Examiners.—Twenty-five out of 41 candidates for examination of the last meeting were granted licenses to practice in the state of Virginia.

Nine Failed by Examining Board.—Out of 64 candidates for examination at the last meeting of the Ohio State Board of Dental Examiners, 55 were granted licenses to practice in the state.

New Jersey State Dental Society.—Officers for the ensuing year are: Dr. M. R. Brinkman, of Hackensack, president; Dr. Charles A. Meeker, of Newark, was re-elected secretary, and Dr. Henry A. Hull, of New Brunswick, treasurer.

Dr. Atkinson Reappointed to State Dental Board.—Governor Terrel has re-appointed Dr. D. D. Atkinson, of Glynn county, Ga., a member of the State Board of Dental Examiners. The appointment is effective August 13, or five years.

Injured by Explosive of Vulcanizer.—Dr. Oliver Colburn, an aged dentist of Big Rapids, Mich., was seriously injured by the explosion of a vulcanizer which blew every window out of the house. Eighteen stitches were necessary to close a wound in his face.

Change of Location.—Dr. W. J. Brady, Iowa City, Ia., will move to Kansas City, Mo., September 1st. He has accepted a professorship in orthodontia in the Western Dental College, and will practice orthodontia as a specialty. Dr. Brady is also one of the editors of the Western Dental Journal, published in Kansas City.

Omaha Dental College Ceases to Exist.—It is reported that the Omaha Dental College has been bought by the Creighton Dental College, and the two are to be combined under the name of the Creighton Dental College.

Montana Examining Board has elected officers as follows: President, Dr. B. J. Keenan, Butte; vice-president, Dr. G. W. Pelzer, Great Falls; secretary, Dr. J. D. Watt, Helena; treasurer, Dr. W. A. Tudor, Bozeman; Dr. C. H. Head, Helena, member of executive committee.

Deaths.—Dr. George B. Chester, a prominent Elkhart dentist, died from tuberculosis at Aiken, S. C. Henry Biggart, a dentist of Brooklyn, died there from heart failure, July 7, aged 68 years.

Dr. Homer Cunyus died at Crockett, Tex., July 5, from consump-

Home from Fort Sheridan.—Lieut. Hugo Rietz, of Manitowoc, Wis., who enjoys the distinction of being the youngest dental surgeon in the United States army, is home for a visit from Fort Sheridan previous to his departure for a tour of the world. Lieut. Rietz is just back from service in the Philippines.

Michigan State Dental Association.—The following officers were elected: Dr. A. L. Legrow, Three Rivers, president; Dr. E. B. Spalding, Detroit, vice-president; Dr. L. N. Hogarth, Detroit, secretary; Dr. J. Ward House, Grand Rapids, treasurer.

Dr. George Zederbaum, Charlotte, was elected to fill a vacancy on the board of trustees.

Dental Examining Board Results.—Massachusetts State Examining Board failed 42 out of 110 applicants for license at the recent examination.

The West Virginia Examining Board failed 14 out of 41 candidates at its June meeting.

The Rhode Island Board failed 7 out of 20 candidates.

The World's Anatomists, by G. W. Kemper, M. D., Son & Co., Pub., 50 cents. This work contains the concise biographies of anatomic masters from 300 B. C. to the present time. It comprises the names of 229 anatomists, together with 16 authors of works on anatomy. It is a most captivating little volume of 79 pages, and will prove of great interest to all those associated with anatomical work.

Why Porcelain Changes Color in Fusing.—The changing of the color in the mass, to my mind, is due more to the movement in the molecules in the mass than it is to the burning out, and when the temperature is raised, the molecules are changed and the coloring matter sinks or gravitates toward the center under high pressure, the tendency of the mass being to globulate. This is true of changes that take place in the inorganic world.—G. W. Cook, Chicago, in Dental Review.

Collect Your Bills.—Patients who owe bills which are past due, if in need of further dental services will seldom go to the dentist whom they owe to have it done, even when they expect to pay for that particular work. But when they are forced to pay the old bill they are as likely to return for further work to the original dentist as to go elsewhere; more likely, if the work has been satisfactory, and work which has been paid for is usually the most satisfactory.—H. G. Logan, Aurora, Ill., in Dental Review.

Dentistry Just a System of Mechanics.—Dr. D. D. Smith, of Philadelphia, in an address before the members of the Michigan Dental Association in July, said that dentistry is not a branch of the medical profession, adding: "It is nothing more nor less than a system of mechanics, the outgrowth of an inadequate educational conception."

He took the stand that the reform needed in dental teaching is one amounting almost to revolution, providing for a wider curriculum to make a standard as high as that of the medical profession.

Wisconsin State Dental Society.—Officers were elected as follows: President, Dr. W. H. Cudworth, Milwaukee; vice-president, Dr. W. H. Mueller, Madison; secretary, Dr. Harvey N. Jackson, Milwaukee; treasurer, Dr. Adolph Gropper, Milwaukee.

The next annual convention will be held in La Crosse. A committee was selected to work out a plan for the re-organization of the society on the lines of the Illinois society. A legislative committee was appointed to draft a bill to give the State Board Examiners a chance to provide for reciprocity between states in exchanging licenses.

Theory and Practice.—Sydenham, some 250 years ago, recommended that young men desirous of studying medicine should lay aside their books and read Don Quixote! He had a profound contempt for the book learning of his times. While he knew the current theories, instead of trying to make them the basis of his practice, he relied mainly upon observation of the natural processes of the body and their various normal and abnormal manifestations. His aim was to aid nature and to avoid harming her. Instead, therefore, of the complex remedies and prescriptions of his times he gave simple remedies and carefully watched their actions. He studied his patients and left theorizing to others. And he was wonderfully successful.—American Journal of Clinical Medicine.

Change of Location.—Dr. Gibford, of Albia, Ia., has sold his dental business to Dr. Russell, of Milo.

Dr. Gardner of Teutelling, Ia., has sold his practice and office to Dr. Snyder, of Des Moines.

Dr. Croop of Carrol, has bought the dental fixtures of the late Dr. Handley at Fremont, Neb.

Dr. Wentworth, of Marinette, Wis., has sold his office and practice to Dr. Redmond, of Amberg.

Dr. J. W. Hedrick of Mulberry, Ind., has closed his office and will go to Lacrosse, Wis. He will be succeeded by Dr. Banks, of Russiaville.

Dr. J. M. Mckine, of Hannibal, Miss., will go to Live Oak, Fla., where he will resume the practice of his profession.

Dr. C. J. Lyons, Adrian, Mich., has sold his dental office to Dr. T. C. Reid, Dundee, Ill. It is said that Dr. Lyons will go to Dallas, Tex., to accept the chair of crown and bridge-work in the Central Dental college located in that city.

Pigmies' Teeth.—Our frequent and valued contributor, Capt. A. F. H. Howe, communicated recently to the Odontological Society an interesting monograph upon the dentition of the curious little African dwarfs, which, copiously illustrated, appears in the Transactions of the society for January.

After referring to the legends confirmed by Sir Henry Stanley in 1887, and by Sir Harry Johnston later, we are reminded of the fact that even in 1883 skulls of a kindred race were presented to the College of Surgeons by Emin Pasha. Respecting the six living specimens of pygmies lately brought to England by Colonel Harrison, four males and two females, Captain Howe has made a careful study of their mouths, and presented models to the Museum of the Odontological Society. His examination confirms the reports that the teeth of this tribe are strong and large, though they are mutilated frequently by an ancient custom. It appears, however, that there is much irregularity and abnormality, so that they are quite the reverse of beautiful. Captain Howe mentioned that Mr. Frank Farmer had anticipated him in taking models of some of the mouths. The pygmies varied in age from 18 to 35, and in height from 3 feet 9 inches to 4 feet 2 inches. It is a generalization, which careful and expert anthropological research invariably reveals, that these types of man are not altogether free from dental pathological conditions we associate with a higher civilization.

For instance, among this small group of six individuals, there were teeth still unerupted, and others prematurely lost from becoming loose and falling out.

Also there is alveolar absorption, and deposit of soft calculus. The general appearance is that of senility, and it is said that these people rarely live beyond the age of 40.—British Medical Journal.

After Illegal Practitioners.—Dr. H. M. VanVoorhis, secretary of the State Board of Dental Examiners, who has been attending to prosecutions of violators of the dental law of West Virginia, has just gained a verdict in the circuit court rendered by Judge Reynolds in Tucker county, against Dr. R. R. McVettie, Dr. O. A. Miller, and Dr. Jack McVettie, for practicing dentistry without a license, as the law provides.

They all pleaded guilty, and as it was their first offense, Judge Reynolds let them off with a minimum penalty. The statute prescribes that any person, "upon conviction, shall be fined not less than $50 nor more than $200, or confined in the county jail not less than three months, or both for each and every offense." Judge Reynolds stated that the penalty for the second offense would be much more severe than the first.

The McVetties and Miller were indicted on two counts by the grand jury of Tucker county, the second indictment being held open in each case as a guarantee for good behavior in the future.

These men held diplomas from dental colleges, and licenses to practice dentistry in other states, but these were no protection to them against the violation of the laws regulating the practice of dentistry in West Virginia. Cases against dentists in other counties are pending.

The National Dental Critic, a monthly journal edited by Dr. Emory A. Bryant, Washington, D. C., devoted to the practical progress and politics of dentistry. The editor states that it is the intention to scan very closely such matters as are of interest to the profession, and the flaws that appear will be criticised without fear or favor. The National Dental Association, army and navy legislation, and other matters of interest to the profession have been receiving the critic's attention. The D. D. S. is a new bi-monthly dental journal, published by the Dayton Dental Supply Co. The editors are G. A Billow, Alden Bush, F. M. Casto, H. V. Cottrell, and H. M. Semans. The first number contains 16 pages of reading matter, selected from other dental journals.

Dentistry as a Business.—A man who has chosen this profession has many problems to master before he is a successful man.

After he has completed his course of study in college and received his degree, he must find a location, fit up his office, hang out his shingle, and then if he is the right kind of a man he is ready for business.

A man who would make a success of this profession must practice the golden rule. He must remember that he is not out to make a fortune in a single deal, but to gain a reputation by fair and honest work of the highest type. If a patient seeks your advice, tell him what is best for him, not what is best for you from a financial standpoint.

To make your business a successful one, be systematic in everything you do—in your bookkeeping, in your records of services rendered, in fact, everything that pertains to your daily routine of work. Do not do things in a slip-shod manner.

Be punctual. If you have certain hours for business—and you should have—be there; not 15 minutes later, but exactly upon the dot. Make your appointments and be on hand to keep them.

When we have patients we should know exactly how to handle each one, be they old or young, nervous people, or little children.

We should study human nature. The nervous ones and the children need all the encouragement that can be given, and each, if tactfully handled, will soon find the dentist to be his friend and not one who wishes to see him suffer.

In the hum and hustle for business, we must not forget the world. We need not only rest, but recreation, and the sources are many, viz.: spending an evening with a neighbor and talking over current events, attending social gatherings, atttending church and many other things too numerous to speak of, but which will benefit you and yield excellent returns if you do not use them merely to advertise your business.

Be a man alive to the best interests of the community in which you live. Be bright and cheery, greeting everybody with a pleasant smile. These, together with hard work and perseverance, will make your profession a most successful one, and of which you may well feel proud.—S. A. Helck, in Dental Review.

Robberies.—Thieves entered the offices of Dr. Paul Barney and Dr. C. P. Peterson, of Maukato, Wis., July 12, and stole all of Dr. Barney's gold foil, gold, plate, and gold solder, and at Dr. Peterson's the gold foil was taken, all amounting to $100. Dr. Matts, of Wells, was also robbed of gold to the amount of $40.

The dental office of Dr. P. A. Riebe at Wauseon, Wis., was entered July 1 and gold amounting to $25 stolen.

The office of Dr. Dunn, dentist of Warren, O., was robbed of over $100 worth of dental materials.

The dental offices of Dr. J. K. Nash and Dr. Hineman, of Youngstown, were robbed of gold filling and gold crowns.

Dr. J. B. Vedder, of Akron, O., on his return from his vacation, found his office had been robbed of between $10 and $15 worth of gold and platinum.

The office of Dr. W. L. Cobkey, of Appleton, Wis., was entered and $60 worth of gold taken. The same thieves robbed Dr. Sullivan of Kankanna of $100 worth of gold. Offices at Manitowac, Sheboygan, Menasha and Oshkosh were also robbed.

The dental office of Dr. G. C. Nixon, of Youngstown, O., was robbed of about $20 worth of gold.

Burglars entered the offices of Dr. William H. Morris and Dr. Dillingham at Manitowac, Wis., stealing from the former gold amounting to about $20, and from the latter $15 in money, and gold amounting to $75.

The dental offices of Drs. Irwin and Bagley, W. F. Brown, and H. D. Barr were entered at Aniston, Ala., and gold stolen to the amount of several hundred dollars.

Dr. C. D. Richey, York, Pa., robbed of $60 worth of instruments and materials, July 13.

Investigation on the part of the police department of Fond Du Lac, Wis. (June 29), has revealed the startling information that the recent robberies of dental offices in various cities throughout the state have been committed by an organized band of thieves. It appears that the thieves are after the gold leaf that is used for filling purposes by the dentists, and the various other articles of value about the offices are left untouched. The work of the band of robbers is very clever, so clever in fact that the police circles have been unable to secure any clue whatever to the perpetrators of the mischief. Dr. McCarty is the only dentist to lose any gold leaf in the city as yet, but at the rate the dentists in other cities are suffering it is hard to tell when another visit will be made to some local office.

Inlays Immune to Decay.—1. The inlayed filling offers greater immunity to recurrent caries by virtue of its sealed cemented joint between filling and cavity wall. In the gold-foil, plugger-made filling, no matter how skilled and conscientious the operator, how perfectly the cavity is formed, how far extension for prevention is carried, howsoever well the gold is condensed and adapted, what time and labor are spent in every detail, there still remains after completion a filling without adhesion, with an open joint between gold and tooth structure. In some portions of the cavity wall this joint, in good hands, is microscopical; in other portions we all know it is at times an appreciable space. In all cases it is an actuality—a mechanically and physically demonstrable fact of each case. This space between cavity wall and filling undeniably exists and persists as a constant menace. It is the vulnerable point, and if caries recommences it will almost invariably be at some point of juxtaposition of gold and enamel.

What is the history of a gold-filling? Take, for example, one of fair size, located approximo-occlusally—the kind whose offices are generally most needed—the kind one sees in practice every day in the mouths of people who possess the culture and means to give their bodies the best care, and made by dentists of acknowledged ability and standing.

For a brief period of one, two or three years the tooth is exempt from caries; in the next period caries invades its gingival border, and the filling is repaired by a small gold-foil patch. Caries is thereby retarded for a lessened period, and another small patch is soon needed. Caries recurs, is corrected, and recurs again, until after a decade the tooth remains a mere mosaic of gold amalgam and cement patches, of indifferent efficacy, the approximal surface having meanwhile been wasted by repeated polishings, which have only aggravated the cause of the trouble. Finally, the whole mass is replaced with an entire new filling, only to have the former process repeated.

Understand, this is not a general charge against gold-foil fillings. It is an explanation of why failures occur, when they do occur. Is it not sound reasoning to conclude that, given an operation consisting of gold inlay perfectly fitting a properly formed cavity, and set with cement sealing the joint throughout, you have safer conditions? Do not the results of the observation and experience we already have bear out this view? They must, because it is truth, both theoretically and practically.—Items of Interest.

Growing Alike.—(The following lines suggested themselves to the writer upon hearing a profound physiological lecture. The speaker said it was an established fact that the average husband and wife, after living for years together, grew to resemble each other; and he further claimed that an individual would grow in time to resemble a particular person, avocation, or, in fact, anything with which he may have been for some time intimately associated).

And now as I ramble in fancy I see
  New looks on the people I meet:
The photographer, much like a picture is he;
  And the poet resembles his feet.

The pianist appears like a person of note;
  The dressmaker looks like a bride;
The lodge fiend a countenance wears like a goat;
  While the monk is a trifle cross-eyed.

The dealer in dry goods, he looks very dry;
  The swordsman resembles a fence;
The baseball left fielder now looks like a fly,
  And the banker is like thirty cents.

The physician resembles a pill-ory, grave;
  The dentist, the bridge of sighs;
The druggist looks thin like solutions he gave;
  The professor, the clouds and the skies.

On the lawyer a will-ful expression is traced;
  The singer's a person of tone;
George Washington's namesake is real hatchet-faced;
  The butcher displays some backbone.

The phiz of the milkman resembles the brook;
  On the clock-maker's face there are digits;
The sausage man carries a hang-dog look,
  And the housekeeper's face is like Bridget's.

There's a face on the printer shop's devil like pie;
  The carpenter's head is quite level;
The soapmaker's visage betokens the lye;
  And the editor looks like the devil.

Patents of Interest to Dentists Recently Granted.—

824087—Toothbrush, Solon E. Babcock, Plateau City, Colo.

824465—Metallic support for artificial teeth, David N. Booth, New York, N. Y.

824096—Dental articulator, Walter W. Crate, Camden, N. J.

824111—Making teeth, Harry A. Gollobin, Newark, N. J.

824218—Making dental devices, Stanley Towle, Fall River, Mass.

825268—Antiseptic and perfumed block for dental stoppings and other similar purposes, Lucien Eilertsen, Paris, France.

825271—Right-angle bur-mandrel, George N. Guthrie, Jr., Cookeville, Tenn.

825578—Tooth-shade guide, Arthur W. Browne, Prince Bay, N.Y.

825356—Artificial tooth for crowns and bridges, Wm. B. Short, New York, N. Y.

825891—Dental engine, Arthur W. Browne, Prince Bay, N. Y.

825896—Dental measuring tool, Francis X. Dusseau, and B. F. Kirk, Detroit, Mich.

825901—Vulcanizer, Edmund D. Gilbert, Philadelphia, Pa.

825940—Crown-tooth attachment, Henry H. Schuman, Hartford, Wis.

Copies of above patents may be obtained for ten cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

"It Is Better to Laugh Than Be Crying."—The publishers of the Pacific Gazette, San Francisco, Cal., who suffered the loss of their dental depot, and had their dental journal and material destroyed by fire, make the following good-natured announcement in their July number: "We beg your pardon for not getting The Gazette to you last month. We were busy moving, and our printer was out of type." The James W. Edwards company are now located at 2264 California St., and we hope the Gazette will be no longer without type.

REGULAR CONTRIBUTIONS

IMPORTANCE OF EARLY ATTENTION TO THE TEETH OF CHILDREN.*

BY L. P. BETHEL, M. D., D. D. S., COLUMBUS, OHIO.

No teeth are of more importance than the deciduous, nor more neglected. Why they are neglected is problematic, but parents in general do not seem to understand the importance of preserving the deciduous teeth so long as they are to be replaced by others. And perhaps our dentists have not given parents that instruction on this subject that they should, to enlighten them.

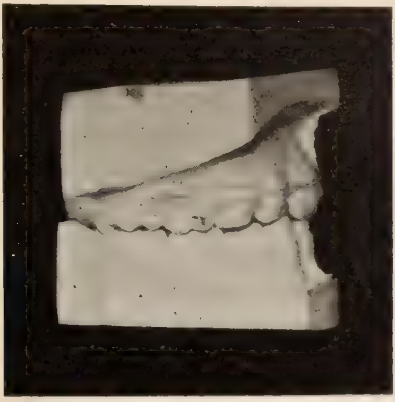


Fig. 1

Some time ago a certain dentist remarked that "he did not care to do dental work for children, they were so hard to manage, and it was an unsatisfactory practice."

Every dentist knows the difficulties in the management of children, but should this be a valid excuse for the neglect of such important organs as the teeth? When a dentist accepts a family as patients, it is his duty to care for the teeth of those persons, to the best of his ability. This the patients expect, and anything short of it is, to say the least, an imposition on the implicit trust they have placed in that dentist.

---

*Read before the Indiana State Dental Association, June, 1906.

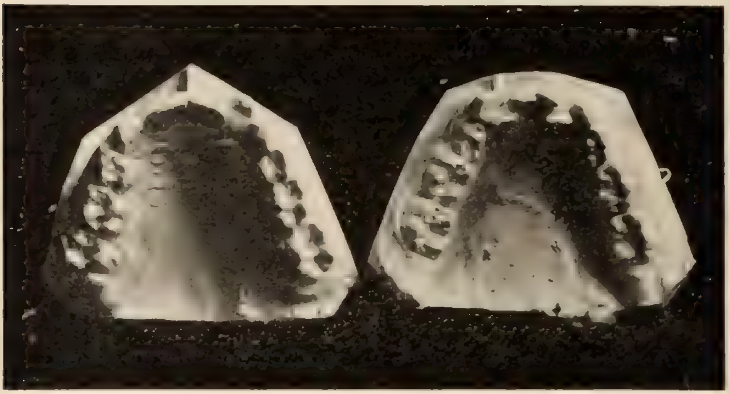


Fig. 2 Fig. 3

Then there may be, and probably are, many dentists who are indifferent as to the care of the deciduous teeth, or do not themselves see or know the necessity for their preservation. Their preservation is of more importance to the child than dentists in general have in the past surmised, and it is to recall the many reasons for maintaining the teeth in good condition that I shall at this time consider briefly some of the most important of them.

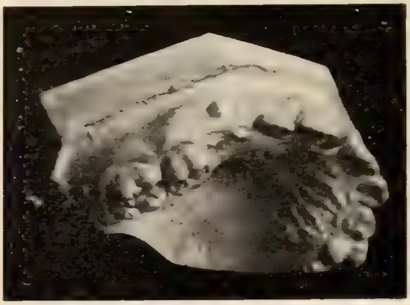


Fig. 4

Where we have the full complement of teeth in normal occlusion, it gives the greatest amount of masticating surface possible, and not only enables the child to masticate thoroughly, a feature of prime importance in itself, but the jaws will have been normally developed from the regular eruption of all the deciduous teeth. But this is only one phase of the importance of normal eruption and occlusion of the deciduous teeth. We should not overlook the influence this normal arrangement has, ultimately, on the further development of the jaws to accommodate the permanent teeth, assisting the permanent teeth to erupt in proper position, producing normal occlusion, with its beneficial influence on the growth and development of contiguous tissues.

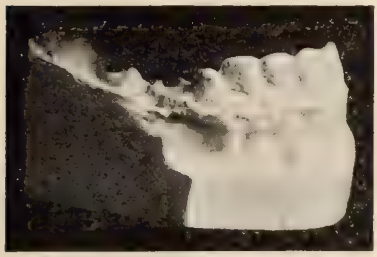


Fig. 5

Fig. 6

THE INFLUENCE OF PROPER OCCLUSION ON DEVELOPMENT OF THE JAWS.

When the deciduous teeth are in normal alignment and occlusion, they support one another the same as do the permanent teeth. As the permanent teeth grow down and erupt, being in the aggregate larger than the deciduous, they exert pressure along the direction of the arch, stimulating growth in the jaw, which develops in size to accommodate the permanent teeth. Thus, when the molar teeth erupt, a forward pressure is exerted on the

Fig. 7

deciduous teeth in the lateral halves of the jaw, and through the influence of this pressure there is a lengthening of the jaw. And you have all noticed how the deciduous anterior teeth separate just before the time of eruption of the permanent, and the jaw is expanded laterally.

Now if the support the deciduous teeth lend to one another be ruptured by premature loss of one or more teeth, the jaw will not develop fully. For instance, if the teeth be lost, say the first deciduous molar, the wedging influence from eruption of the permanent molar will be posterior to the lost tooth and will not cause the usual forward movement of the teeth anterior, and normal development does not take place. Or, if anterior deciduous teeth be prematurely lost, say the lateral incisors or cuspids, the wedging force necessary to stimulate development is interfered with, and this portion of the jaw does not fully develop. Consequently, when the permanent teeth erupt, there is not room enough for their accommodation, and some must take a malposition. A case in point is shown in Figs. 1, 2 and 3. On account of the premature loss of deciduous teeth, there has been a lack of development of the jaws, and consequently not space enough for the coming permanent teeth. There is also lingual deflection of the lower laterals and insufficient room for the permanent laterals above.

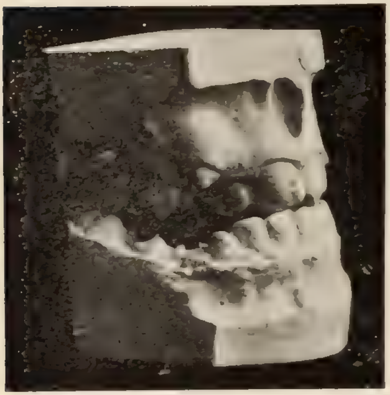


Fig. 8

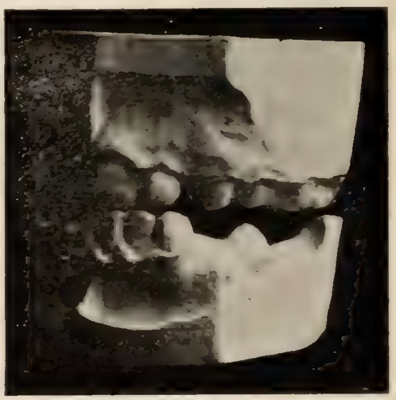


Fig 9

MALOCCLUSION FROM PREMATURE LOSS OF DECIDUOUS TEETH.

It is surprising how many cases we find of malocclusion due to premature loss of the deciduous teeth, and many that might not have occurred had the dentist applied a temporary retainer to hold the space, made by the premature loss of one or more deciduous teeth, until the permanent tooth or teeth had erupted.

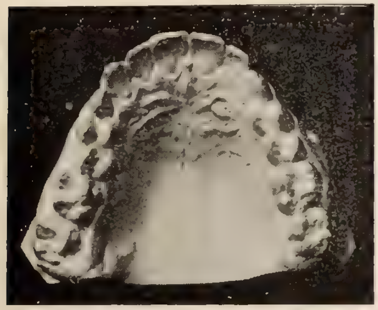


Fig. 10

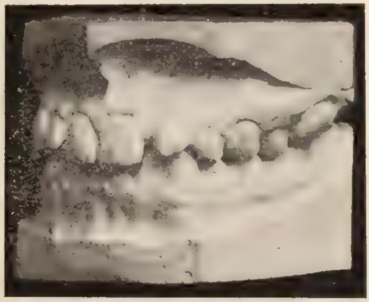


Fig. 11

BANEFUL RESULTS OF CARIES OF THE TEETH.

Caries is responsible for premature loss of many teeth, to say nothing of its hindrance to thorough mastication of food, or its baneful effects on the system through poisonous materials generated in badly decayed or abscessed teeth. As the result of caries we may find the roots of the teeth remaining in the jaw beyond the time when the succeeding teeth should erupt, and this may bring about further ill results. On account of the prolonged re-

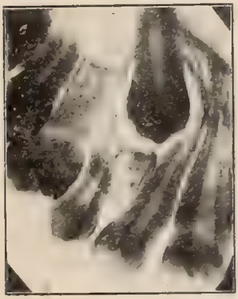


Fig. 12

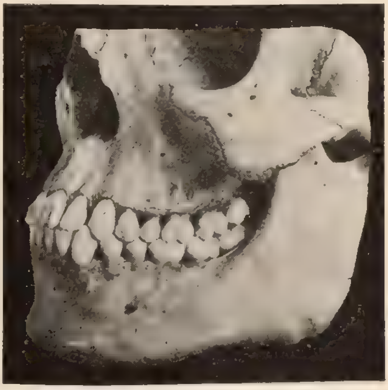


Fig. 13

tention of the roots of the deciduous teeth, the succeeding permanent teeth may be deflected from their course into malocclusion, or may become impacted. You will notice in Fig. 4 how a tooth has been deflected by the prolonged retention of simply the roots of the deciduous tooth.

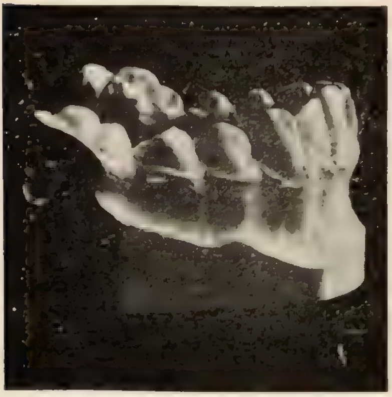


Fig. 14

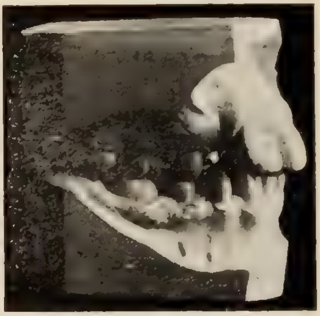


Fig. 15

A CASE IN PRACTICE.

Fig. 5 shows broken down deciduous teeth in a boy twelve years of age. An X-ray skiagraph (Fig. 6) revealed the presence of the permanent teeth in the jaw, apparently impeded in their process of eruption by the retained roots. The remains of the deciduous teeth were extracted and a temporary retainer made to extend from the first permanent molar to the lateral incisor (Fig. 7). By this means the space was held while the permanent teeth

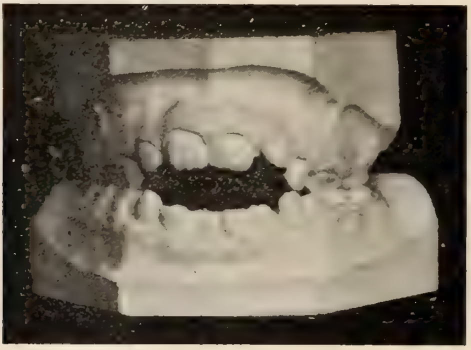


Fig. 16

erupted. This case being otherwise of interest, I am going to tell you a little more about it.

The deciduous teeth were sadly neglected, and many of them were devastated by caries. Some of the teeth were prematurely lost, then nasal obstruction and mouth-breathing occurred, and at the time of presentation, age 11½ years, even though the adenoids had been removed some time before, the teeth and jaws presented a deplorable condition. Fig. 8 shows the condition on the right side of the mouth. As you will notice, there was no occlusal contact except one casp of the right upper molar with the lower, and the riding of the upper centrals on the lower incisors. On the left side (Fig. 9) the lower first permanent molar had been extracted, leaving no occlusion of the teeth on that side. Can you imagine a more deplorable condition? Thorough mastication of food was impossible, and the lad had to live on a bread-and-milk and mush-food diet. In consequence he is an illy-nourished, delicate-looking boy, not normally developed either physically or mentally. Could the deciduous teeth have been preserved and the normal shedding taken place with normal eruption of the permanent teeth, who could question but that that same boy today

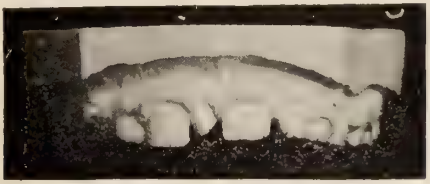


Fig. 17

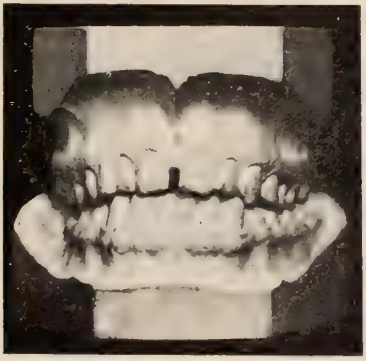


Fig. 18

would have been better in every way. The father and mother are both healthy, intelligent people, and their other two children are well developed and physically strong.

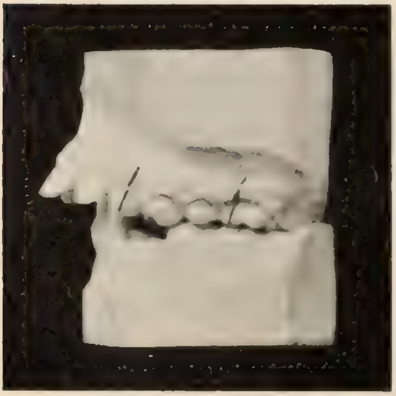


Fig. 19

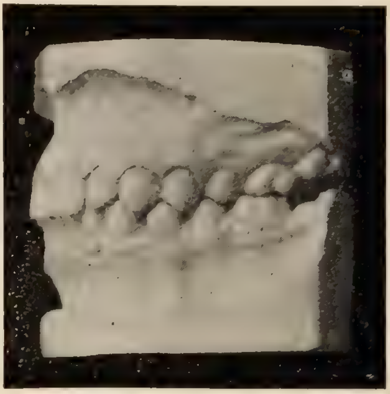


Fig. 20

Should a parallel case occur in the family of any of your patients, would you feel any guilt for allowing such a state of affairs to come about?

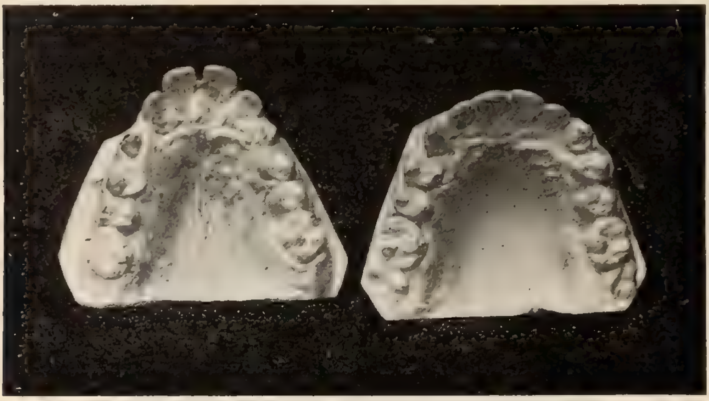


Fig. 21 Fig. 22

PROLONGED RETENTION OF THE DECIDUOUS TEETH AND ITS EFFECT ON THE PERMANENT.

Prolonged retention of the deciduous teeth may have its influence on the permanent teeth by deflecting some tooth, causing it to erupt in a maloccluded position. Such a case is shown in Fig. 10. Here the temporary cuspid tooth was retained and the first bicuspid tooth erupted distal to its normal position, causing unequal development of the arch and a disparity in size of the arches, and facial disfigurement. Or, prolonged retention of the deciduous teeth may cause impaction of the permanent teeth. For example, the case shown in Fig. 11 is one in a patient 16 years of age, where the left temporary cuspid is retained and the permanent cuspid impacted, as shown in the skiagraph (Fig. 12). Notice how the lateral incisor has been forced out of alignment by the impacted cuspid. Thus we are reminded of the early attention to and care of the deciduous teeth. But it is also necessary to have a watchful care over the teeth of the children until the permanent teeth to and including the second molar are erupted, for normal occlusion is so essential, and during the years from six to twelve many things may occur that might materially interfere with this desired condition if not cared for by the watchful dentist. Fig. 13 shows the teeth in normal occlusion, with which you are probably all familiar. See how exactly the teeth interdigitate, and also note the arrangement of the inclined planes of the cusps. These inclined planes play an important part in holding the teeth in position when in good occlusion, and oftentimes exert as much influence in keeping malposed teeth out of their correct position.

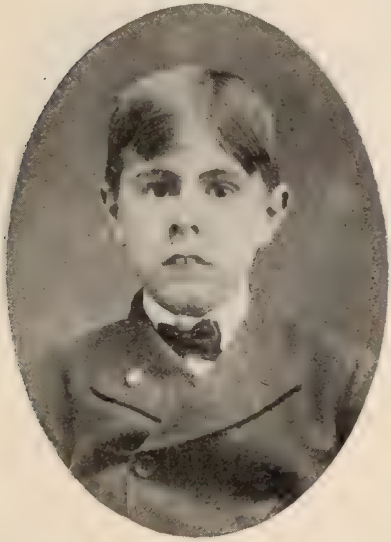


Fig. 23

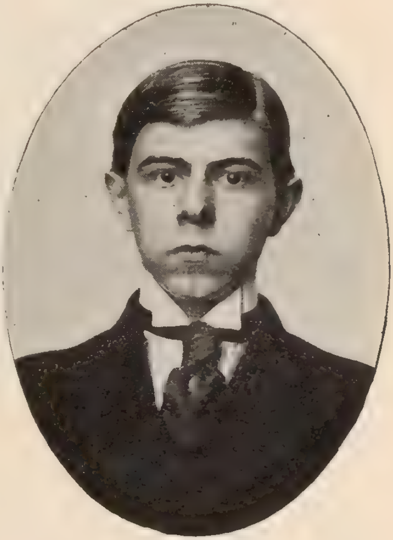


Fig. 24

ADVANTAGES OF NORMAL OCCLUSION.

The general arrangement of the teeth, the buccal cusps of the lower falling in the sulci of the upper bicuspids and molars, and the lingual cusps of the upper teeth falling in the sulci of the lower bicuspids and molars, gives the greatest possible surface for mastication of food. So when teeth are in malocclusion, mastication is interfered with to a greater or less extent according to the position occupied by the teeth out of harmony with the line of occlusion. When the teeth are in normal occlusion we find the jaws in proper relation one with the other. Regarding the normal arrangement of the teeth, Dr. Angle says: "Examined carefully, it will be seen that perfect occlusion is incompatible with any degree of irregularity, but that the arrangement of the teeth must be even and regular, all in perfect harmony. Not only this, but the jaws, the muscles of mastication, the lips, and even the facial lines, will then be in best harmony with the peculiar facial type of the individual. Also, when the teeth are all in good alignment and in normal position in the arch, they lend support to each other. Then the occlusal inclined planes, the interdependence of the arches and the influence of the muscles form a powerful factor in maintaining the teeth in position so long as they support each other. Interfere,

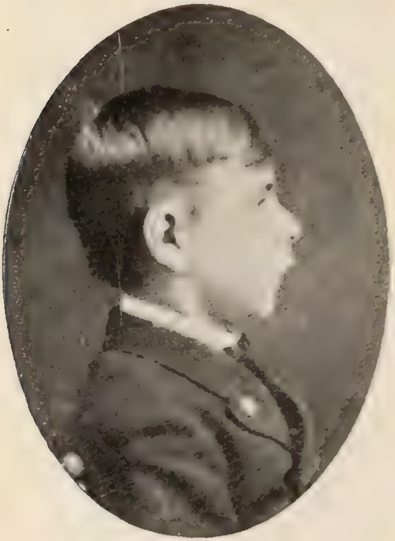


Fig. 25

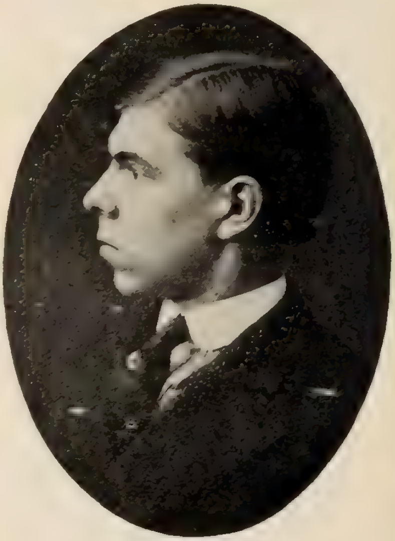


Fig. 26

however, with this support by extraction of a tooth or teeth, for instance, and a shifting of one or more teeth is liable to occur, causing some degree of malocclusion.

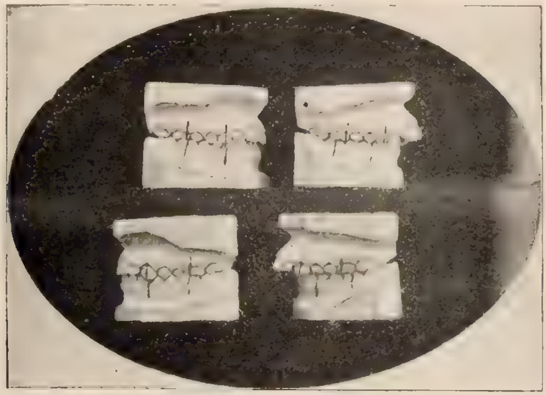


Fig. 27

MALOCCLUSION DUE TO LOSS OF TEETH.

In Fig. 14 you will notice the inclination of the second molars brought about by the extraction of the first molars, and consequent loss of support. The tipping of the second molars is quite common where this condition exists.

In the next picture (Fig. 15), notice how the occlusion has been changed through shifting of the teeth, due to loss of teeth and lack of support. Cases are numerous where extraction has occurred and the teeth shifting have caused inharmony in the arch and disfigurement of the features.

In case extraction of any of the permanent teeth becomes necessary, an artificial substitute, such as bridge-work, should be inserted in order to hold the space and maintain the proper support of all the teeth in the arch. If this were given more thoughtful attention by dentists in general, many maloccluded cases would be avoided.

OTHER CONDITIONS THAT MAY CAUSE MALOCCLUSION.

Then there are other conditions that may cause malocclusion if not watched for and treated if they appear: Habits, such as thumb-sucking, lip-biting, tongue-biting, etc., are apt to cause a disarrangement of the teeth against which pressure is brought. Fig. 16 shows the results of tongue-biting in a child 11 years of age, when the impressions were taken.

SUPERNUMERARY TEETH.

Supernumerary teeth may erupt and crowd other teeth out of position. Fig. 17 shows such a condition. Abnormal frenum labium, a condition quite common in children, holds the central incisors apart more or less according to the condition existing. This form of malocclusion is shown in Fig. 18.

Fig. 28

Fig. 29

DISUSE OF THE TEETH.

Disuse or improper use of the teeth is another thing detrimental. The teeth were made for masticating. Vigorous mastication is necessary to stimulate these tissues and keep them in a healthy condition. Mastication has its influence on the development of the process, and jaws, and other contiguous tissues, so allow it to be interfered with as by disuse of some of the teeth through invading caries, it is not a great while until the opposing disused teeth also become tender to bite on and the stress of the bite in this location will be found markedly less than in the same mouth when the full complement of teeth existed and vigorous mastication was practiced.

The disuse of teeth from bolting the food or the eschewing of bread crusts and other hard materials and adoption of the prepared foodstuffs, is detrimental to the teeth and connecting tissues.

NASAL OBSTRUCTION AND MOUTH-BREATHING.

Then, the effects of mouth-breathing and nasal obstruction in children are farther reaching and more serious than ordinarily supposed.

The abnormal conditions which cause mouth-breathing, particularly nasal obstruction by tonsillar growths, are seldom painful, and as the child does not complain, the presence of nasal obstruction is easily overlooked. And this is unfortunate, for continued mouth-breathing affects the development of the entire nasal tract, the bones of the face and nose itself. Hearing and speaking are affected, the shape of the dental arch, particularly the upper, is changed, and usually the growth and position of the lower jaw are affected, causing great inharmony of the facial lines, as illustrated by the following cases:

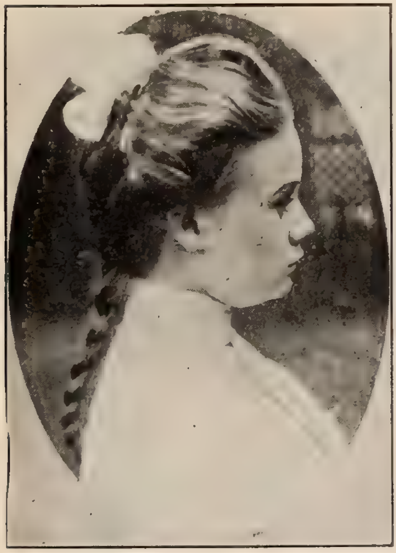


Fig. 30

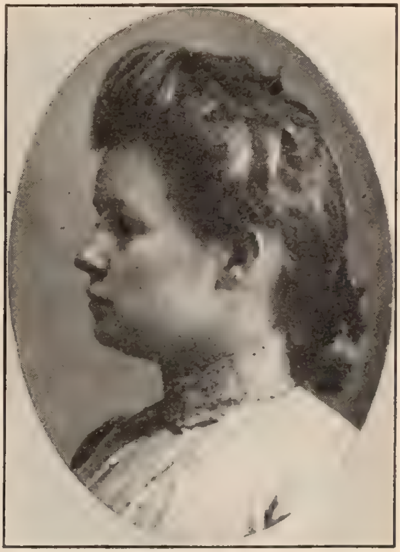


Fig. 31

SOME CASES CITED.

The first case is characteristic of the mouth-breather of several years. Protruding upper incisors, arch V-shaped and narrowed, with high vault. The lower teeth are distal to normal in their relations to the upper, and there is lack of development of the lower jaw. This patient was about 11 years of age when adenoids were removed, and treatment for correction of the maloccluded teeth was started when the lad was about twelve. Fig. 19 shows the malocclusion of the teeth and relation of the jaws after the nasal obstructions had been removed and at the time correction of the malocclusion began. In the lower jaw you will notice that the first bicuspid and permanent cuspids are just erupting.

On another page I referred to the improvement in the facial lines resulting from the restoration of normal occlusion, and as these cases show this, I will take the liberty of presenting pictures of the finished cases as well. Fig. 20 shows the normal position of the teeth and the relation of the jaws after correction of the irregularity. Fig. 21 shows the form of the vault before operation, a narrowed and V-shaped arch. Fig. 22 shows the condition after correction; arch is of normal contour, vault just as high, but broader, the arch having been expanded.

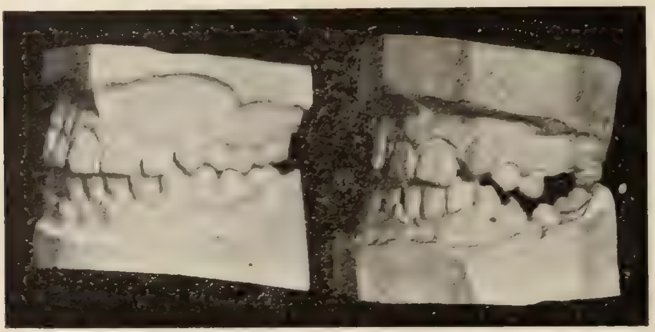


Fig. 32

The effect of mouth-breathing on the physiognomy in this case is shown in Figs. 23 and 25, pictures of the boy as he appeared before correction of the malocclusion was commenced. Figs. 24 and 26 show the improvement in the features brought about through correction of the malocclusion. Note particularly the improvement in the intermaxillary region and in the shape of the nose and lips and chin.

The next case, also a mouth-breather, was characterized by distal occlusion of the lower arch, lack of development of the mandible, contracted upper arch and protrusion of the upper incisors. The patient, who was 14 years of age, gave a history of mouth-breathing dating from about the age of 4 years and continuing until the age of 12, when an operation was performed for the removal of adenoids, after which normal breathing was established, being interfered with, however, by the condition of the mouth, the upper teeth protruding so much and the upper lip being so short and thin that it was with difficulty the lips were closed tightly enough to prevent more or less mouth-breathing, and it was not until the malocclusion of the teeth had been corrected that she could breathe normally through the nose. Fig. 27 shows models of the case before and after treatment. Figs. 28 and 30 show the features before correction of the malocclusion. Figs. 29 and 31 show the change in the features brought about by the orthodontic treatment.

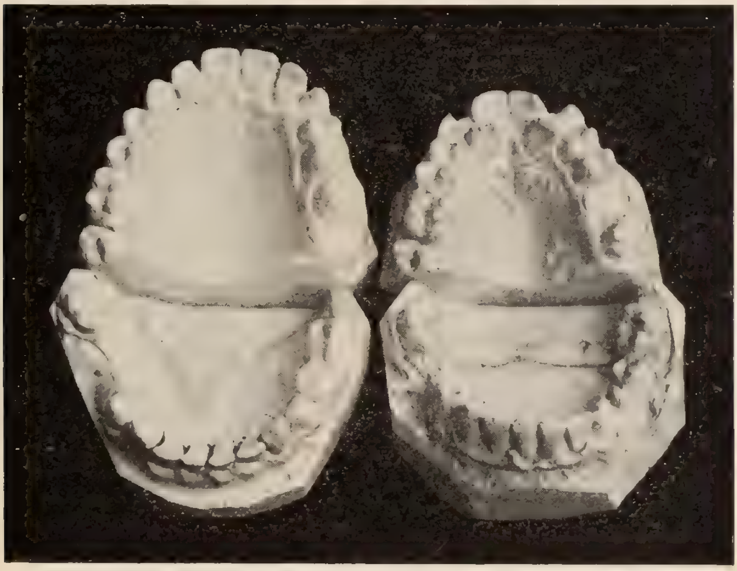


Fig. 33

The next case, a boy of 11 years, was characterized by nasal obstruction and mouth-breathing, premature loss of deciduous teeth, and withal complicated by extraction of some of the permanent teeth. Fig. 32 shows one view of the case before and after treatment. Fig. 33 shows the palatal view and comparative size of the arches before and after treatment. Figs. 34 and 36 show the disfigurement of the features caused by the malocclusion of the teeth. Figs. 35 and 37 show the change in the features brought about by establishing normal relations of the jaws and teeth.

Now, these are but a few of the many, many cases of malocclusion and facial disfigurement brought about by nasal obstruction and mouth-breathing, but will serve to remind you of the detrimental results to the teeth and features of allowing mouth-breathing to become established. And these are not the only detrimental effects of mouth-breathing. It often affects the mental condition of children, and they appear dull and listless in school and have the appearance of being inattentive; there is a thickness of speech and nasal intonation; they are apt to have one cold after another in the head, and sometimes the hearing becomes impaired. Dr. Brady says: "It is a fact that habitual mouth-breathers usually become flat-chested and have insufficient lung capacity.

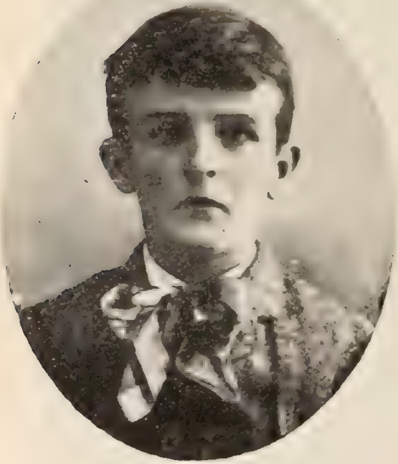


Fig. 34

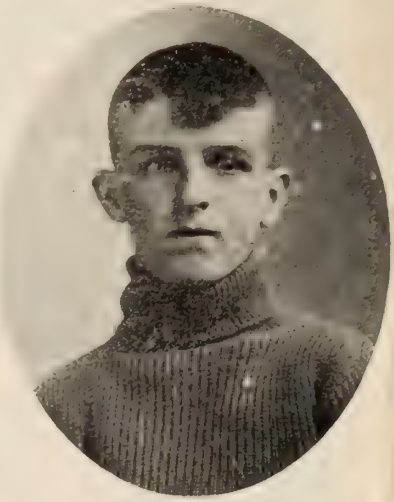


Fig. 35

"Thus it will be seen that although nasal obstruction and mouth-breathing are affections of childhood, usually appearing from the fifth to the twelfth year, their effects are to a greater or less extent permanently established through life, as they affect the proper physical development in many ways, some of those conditions remaining fixed after the period of growth is past."

BAD DENTISTRY DETRIMENTAL.

There is another phase of this subject that I cannot refrain from mentioning as a fruitful cause of malocclusion and its detrimental effects, and that is bad dentistry, such as the extraction of teeth without placing an appliance, where possible, to hold the space caused by the loss; failure to restore teeth badly broken on an approximal surface by caries, and leaning from loss of support, to their normal position before filling; failure to properly contour fillings to restore the support of the teeth in the arch; carelessness in making the occlusion in crown and bridge-work; etc.

Fig 36

Fig. 37

THE DENTIST SHOULD HAVE OVERSIGHT OF HIS PATIENTS.

I have now mentioned many things that may prove detrimental to the child if not seen and corrected; things that every dentist should be able to observe or diagnose, and which should have early and frequent oversight from him to guard against the ill effects that are liable to follow if unobserved or neglected. It is the duty of the dentist to do all he can for the welfare of the teeth of the children, and early attention to them is of importance.

Much destruction can be avoided by prophylactic treatment, and it seems particularly applicable in the mouths of children. This, together with a constant oversight of other conditions, such as I have briefly mentioned, would do a vast amount of good for the child patients and be the fulfilling of unwritten obligations of our dentists as well.

In conclusion, then, are dentists doing at the present time all that they can do for the welfare of children, and if not, where does the fault lie? Are parents not being instructed as to the necessity of attention to the teeth of their children, or are parents neglectful of their duty?

This subject appeals to me as one of the most important, and I hope dentists everywhere will give it due consideration.

GOLD INLAYS — THEIR APPLICATION AND CONSTRUCTION.*

BY F. R. HENSHAW, D. D. S. MIDDLETOWN, INDIANA.

The past few years have been much given to the study and investigation of inlays, particularly those made of porcelain, and in spite of some narrowness and much ignorant criticism we must all begin to admit that they have come to stay. The "Public," that hard-headed and hard-hearted creature that is always the terror of those who wander into untried paths, has become educated to the need for such æsthetic means for restoring lost tooth structures as is offered by porcelain and is also beginning to recognize another truth that the dental profession has long known — that even the most skillfully and carefully perfomed operations in filling teeth will, under certain conditions, fail, for no cause within the control of the operator. It may be taken for granted that every dentist worthy the name, puts into his operations such skill and care that in the majority of cases, a failure will be more likely due to accident or carelessness on the part of the patient, rather than to fault with the workmanship, and yet how many times do we have fillings, upon which we have lavished every attention, return to us after the lapse of only a short time, utterly ruined by recurrent caries, over which the patient has had absolutely no control.

I believe that the investigation of the past few years has established one thing above all others in regard to inlays — that there is less likelihood of decay at a carefully fitted inlay margin, protected by cement, than at the same margin under any other circumstance. If then, there were no other reason for the insertion of inlays, the operation would be entirely justifiable.

---

* Read before the Eastern Indiana Dental Association, New Castle, Ind., May, 1906.

However, when we consider the opportunity for æsthetic appearance, conservation of energy on the part of the operator and of the nervous strain on the part of the patient and of real permanence of the fillings which is undeniably offered in inlay work, we should indeed doff our "bonnets" to the men, who by their courage and persistence have made it possible for us all to appreciate what for a long time only a few preached.

The gold inlay has probably been in use for a longer period than has porcelain and from the difficulty experienced in its construction, has received even more condemnation.

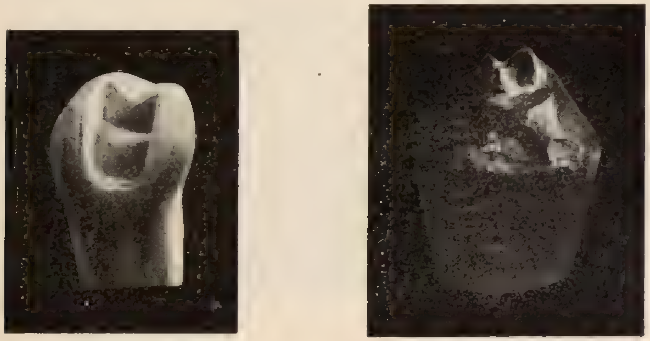


Fig. 1 Fig. 2

WHERE GOLD INLAYS ARE PREFERABLE TO PORCELAIN.

There are several reasons for the preference for gold inlays over porcelain in all teeth posterior to the first bicuspid which I will try to enumerate.

First. Cavity preparation. It is easier to prepare a perpectly safe cavity for a gold inlay than for porcelain because a thinner body of gold may be exposed to stress than would be possible with porcelain.

Second. Margins. The weakest point of a porcelain inlay lies in its margins and where exposed to strain as in a molar, they are almost sure to suffer, while the margins as prepared for a gold inlay are protected by the inlay itself and never become even exposed.

Third. Strength in resisting molar motion. While I do not believe this as of as great importance as the others, believing as I do that a well made and properly inserted porcelain inlay would have all necessary strength, yet it goes without saying that a gold inlay is the stronger.

The difficulty of making gold inlays has been the cause for the reluctance of many to more generally adopt them and the real object of this paper is to describe two methods by which they may be easily, rapidly and accurately made.

ONE METHOD OF MAKING GOLD INLAY.

The first method is one devised by Dr. Alex. Jameson of Indianapolis and is particularly adapted for the smaller proximal cavities in bicuspids and molars. Having obtained an abundant separation and a cavity prepared as for any gold filling, except that there must of course be no undercuts (Fig. 1), an impression is taken in Perfection Impression Material or other suitable medium. A tray for taking this impression is readily made by taking a strip of German silver, 28 gauge and slightly wider than the tooth, bending one end at right angles sufficiently long to reach to the gum between the teeth. By placing the impression material in the angle thus formed it may be very easily forced to place and cooled, preferably by a spray of ethyl chloride, making a very accurate negative of the cavity. Into this negative is built an amalgam model, using any high grade alloy, and when this is thoroughly set it is removed and mounted in the ring of a swaging device (Fig. 2), and into it is burnished and then swaged a matrix of pure gold, 36 gauge. This is removed and trimmed closely to the margins of the cavity, carefully cleaned and annealed and replaced upon the model and filled with Watt's Crystal or other deposit gold, loosely packed. A piece of tissue paper such as comes in boxes or books of gold, is then placed over the model, it is placed in the swager under a rubber plunger and driven home with heavy strokes of the hammer. On being removed from the swager we find the gold compressed almost as

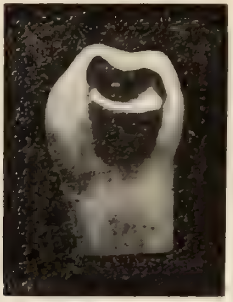


Fig. 3

if cast. More gold is added and the process repeated until the proper contour is obtained. The whole piece may be annealed at any stage if necessary without fear of it losing shape as the next stroke of the plunger would restore it.

The filling is trimmed and polished on the model, the cavity portion roughened and it is set and retained in place as any inlay (Fig. 3).

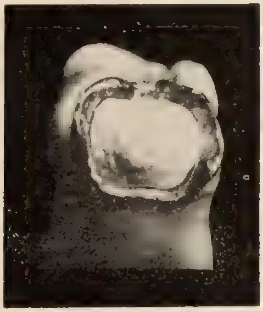


Fig. 4

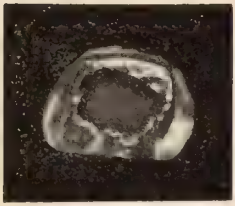


Fig. 5

ANOTHER METHOD OF CONSTRUCTION.

The other method is applicable to larger restorations than would be practicable with the one just described. It is the suggestion of Dr. Arthur H. Fleming of Spartansburg, South Carolina, with some modifications that my own observation has led me to make.

The same procedure is followed in obtaining the model of the cavity as before. Into this is burnished and swaged a matrix of pure gold, about 34 gauge which is trimmed to the margins of the cavity. In the base of the matrix a hole is cut and it is then replaced on the model and a core of tenax and plaster built within almost to the contour desired for the filling (Fig. 4). Over this is built Watt's Crystal gold until it reaches the exact contour desired.

The whole piece is removed from the model, invested in tenax and when set is slowly dried over a bunsen. The surface is covered with cream borax, 20 K. solder applied and the entire piece heated from beneath by a blowpipe flame until the solder flows into the gold which it will do as water into a sponge. When sufficient solder has been flowed into the gold — which may be determined by the appearance of the surface — the flame is turned directly upon the surface and a glaze produced almost as with porcelain.

On being removed from the investment and the core removed we have a hollow inlay which may be finished in the usual way (Fig. 5).

In setting, the cavity in the inlay should be filled with cement from the same mix as the cavity in the tooth and should certainly provide a secure retention.

Either of these inlays might be easily made for simple crown cavities but I believe that cavities of that description can be more easily and safely filled with soft gold than in any other manner.

That the gold inlay has its place is, I think, beyond denial and I wish to give due credit to Dr. Jameson and Dr. Fleming for the above methods which have certainly simplified the matter for us all.

THE HUMANITARIAN ASPECT OF THE GOLD INLAY.*

BY DR. HENRY BARNES, CLEVELAND, OHIO.

Dentistry, ever restless in her endeavor to produce a better result than has before existed, does not, cannot, and will not, bind herself to present results nor old methods, even though they be hoary with age. In this she shows her wisdom, for were it otherwise, that which our fathers did would have been good enough for us. It is given, Mr. Editor, to some to live a little in advance of others, to be pioneers in thought, in methods and in results. To be a little more optimistic, and we take, with good grace, the smile of incredulity which o'erspreads the features of our brethren when we advocate something out of the ordinary course or prescribed ways of doing things. We are frequently called "cranks," and to this we do not object, for we know that a crank is a very necessary article. Sometimes we live to see the principle advocated adopted; sometimes we die before their adoption; but we have an optimism so strong that it amounts to a conviction, and we are willing to trust the future for a confirmation and credit.

---

*This paper was written expressly for the Humanitarian Department of the Dentist's Magazine. Owing to the failure on the part of one of the leading essayists to keep his promise to the Northern Ohio Dental Association, it became necessary for the executive committee of that association to seek and secure a paper of decided merit to fill an important place in a most excellent program. Knowing of Dr. Barnes' work, and learning that this paper had been written for the Magazine, an earnest plea was presented to both the author of the paper and the editor of this department of the Magazine to permit this paper to go before the association, and thus complete the program. Familiarity with the difficulties encountered by the executive committee, and having at heart the best interests of the association, this paper was presented with the understanding that it still remain the property of The Dentist's Magazine. [As this paper was read at the Northern Ohio Association, THE DENTAL SUMMARY has been privileged to publish it with the proceedings, The Dentist's Magazine kindly furnishing advanced proof.—ED.].

TO WHOM SHALL THE CREDIT BE GIVEN FOR THE GOLD INLAY?

I do not know, unless it be our good friend, Dr. W. V. B. Ames, who made them many years ago—as many as twenty, I believe. However, that does not matter, but we do know that he was one of the pioneers, and to him, perhaps, more than to any other man, is due the credit for its present hold upon the dental profession.

I am convinced, and have been for many years, that the conscientious dentist is wearing himself out in his daily work. I hail the gold inlay as a means to alleviate this on his part; for surely humanitarian thought cannot be entirely for the patient.

METHODS OF GOLD FILLING AND INLAY CONSTRUCTION CONTRASTED.

The methods used for a gold filling and for an inlay are so radically different that it may not be amiss to contrast them in order the better to obtain their favorable or unfavorable aspects as viewed from the humanitarian side.

For a gold filling involving contours, separation is almost always necessary. For an inlay this feature is in many cases done away with, except for a little immediate wedging when normal, mesial or distal contours have not been destroyed through caries or irregularity.

With a filling the dam must be used—that blessed dam which came to the relief of the old school whose practice had been confined to napkin and soft gold foil with hand pressure has come to deserve the name, "the elastic profanity," given to it by a worthy divine during the early '70's, and it is credited, with much probability of truth, that it is one cause of pyorrhœa; we do know, however, that the application of ligatures has been the cause of much pain and not a little harm. For the insertion of a gold inlay this is seldom necessary, so that the dread and pain of application and the torture of its retention is done away with. The long and tedious sitting with mouth agape, and the dentist's cheerful "Open wider, please," accompanied with the never-ceasing tap, tap, tap of the mallet until reason was almost driven from the exhausted patient's cranium, with the dentist a good second in exhaustion of nerve force, is all eliminated in the gold inlay, and in its place is the simple adaptation of the matrix to the walls of the cavity, when the work is transferred to the bench; the patient meanwhile reading a magazine, or engaged in other pleasant occupation, such as watching the progress of the work, and becoming so deeply interested in it that they become quite unmindful of their present surroundings. And after the tap, tap, tap has ceased, with the gold filling there comes the final finish with file or saw, and bur and wheel, and strip, etc. But with the inlay this is almost gone. For an inlay properly constructed will require very little finishing after its insertion within the cavity; a little burnishing of its margins and all is finished. The gum tissue will show very little or no evidence of having been disturbed. Beautiful contours can be obtained and nature restored to her original form, or improved upon. Comparative comfort has taken the place of discomfort; gratitude fills the heart and shines through the windows of your patient's soul, and you are not tired yourself. You have performed a very large operation, or several of them, it may be, which, if filled in the ordinary way, would have about exhausted two of the human family; but here your patients smile back the satisfaction of genuine joy and thankfulness because you have been able to do away with so much of the pain and torture usually inflicted.

HOLLOW INLAYS.

Hollow inlays are advocated by some, but I have never been able to produce a uniformly satisfactory result by this method. There is danger of the cement by reason of bubbling, not reaching all portions of the inlay, and when stress is put upon it there may be a destruction of the inlay at the unsupported point, and your work must be done over again, in which case I fail to see the humanitarian aspect.

Others advocate the use of 20 and 22-karat solder and 22-karat gold plate. These require more or less borax to fuse, and while a very nice-appearing inlay may result at first, I have found that after a time numerous small pits develop along its face.

SOLID GOLD INLAY.

By the use of pure gold and platinum matrix, making a solid gold inlay, all future trouble of this nature is entirely eliminated, and the result is a surface which will endure even better than that of any malletted filling. As a matter of fact, no filling is so well condensed as is the pure gold inlay.

HOW TO REMAKE AN INLAY.

Furthermore, should decay appear around the inlay at a future time the inlay may be removed, cavity prepared, and a new matrix made, placing the old inlay therein and adding the necessary amount of gold to restore lost tissues, all of which is a strong argument for the inlay over the filling. Also many teeth can be restored which are now filled with amalgam, thus contributing to your patient's comfort and well-being. Many teeth which are now crowned can be restored to usefulness, and withal be sanitary in their surroundings by the use of the gold inlay.

RESTORATION OF CONTOUR AND CORRECTION OF THE BITE.

In orthodontia it is at times necessary to restore contour, and even plus contour, following out Dr. Black's idea in this respect. Any number of teeth may be built up to correct a bite or to restore a bite as nearly as possible to the original, and these large and extensive operations will require far less of your own and your patient's strength than does our present method of operating. Indeed, may it not be true that because of the extensiveness of the operations necessary many cases are left to shift for themselves or filled with amalgam or cement? May we not be able to do much more for suffering humanity than we have ever done before, and thus make ourselves much more of a blessing in our several communities? For he who relieves pain is blessed, and how much more will he be blessed who prevents pain?

THE TEETH HAVE AN INFLUENCE UPON THE GENERAL HEALTH.

As the years roll by the teeth are receiving more and more consideration. Their value accorded a higher and higher estimate because of the health of the mouth, the portal of the alimentary canal is now being considered as never before as having a decided influence upon the general health of the subject. Granting this to be true, we are justified in any operation which lessens the present pain if it contributes even in small degree to this end.

ORIGINAL METHOD OF MAKING A GOLD INLAY.

As before mentioned, there are several methods of procedure in producing the gold inlay, with varying results. I pin my faith to the pure gold inlay with the platinum matrix, and the method of making the same is one which I have worked out for myself, and I hope it may be tried at least in order that its easy accomplishment, after a little familiarity with its working, may give to those who use it the same relief from that intense strain with which we are all so familiar that it has given me. It is impossible in this short paper to thoroughly describe the preparation of cavities. It is sufficient to say that there are two important mechanical principles to be observed:

First, that the cavity preparation must provide a sufficient draft to provide for the easy withdrawal of the matrix from the cavity.

Second, sufficient anchorage must be made to withstand the strain of mastication, and provide firm retention of the inlay within the cavity. When the first is not possible cement may be used to fill deep undercuts or pits caused by decay.

The cavity being prepared, take platinum foil one and one-half thousand gauge, or fifteen ten-thousandths. This gives a matrix with much more stiffness and rigidity than can be made by the one one-thousandth gauge. Cut the piece large enough to cover the bottom of the cavity, and extend well over the margins. Now have suitably-prepared sticks, pine or other wood, six or eight inches in length, shaped at one end to fit the cavity, gently force platinum into the cavity with the stick, rubbing the same over all surfaces, allowing the foil to fold over margins if necessary. Burnish well into place, and over margins. Remove matrix and anneal, replacing same in cavity, and do as before. Do this until the matrix is fairly well in place. Now take uncured red label rubber, which is the rubber used to label the ordinary rubber garden hose, and cut piece large enough to fill cavity, and much more, then direct patient to close teeth upon same, forcing down upon it for a few minutes, and kneading the rubber between the teeth, care being taken to caution the patient never to remove the teeth from contact with the rubber, as the matrix may be withdrawn and spoilt. Have patient carefully open the jaws, holding your finger upon the rubber, and remove rubber and matrix. The matrix may be broken in places, but if this is not over the margins no harm is done. Place matrix on charcoal block, and have pure gold plate cut into pieces, two or three of which place in matrix; if matrix is broken in body of cavity, melt one or two pieces of gold into a ball, and place same over break, sweating same into matrix; build up piece by piece, but do not at any time use large flame, as the secret of success is in sweating the gold into place, otherwise you will flow your gold over the outside.

The inlay unfinished may be tried in the cavity at any time to determine the exact amount of gold required. No investment is used; nothing to prevent the gold from flowing on reverse side of matrix or elsewhere; no borax is used, except at times, as in sweating you may not flow your gold sufficiently well over margins, in which case a toothpick is dipped in vaseline borax and a film is spread over margin desired to be covered; very small pieces of gold may be used for this purpose. If you have followed the technique you will have a gold inlay about the exact shape desired. The inlay being of pure gold, its margins may be burnished into place before and after setting, a very strong point in favor of the pure metals. I hope, Mr. Editor, your readers, after adopting this method, may enjoy as much relief from strain as has the writer.

* * *

THE UTILITY OF PORCELAIN IN LARGE CAVITIES.*

BY L. E. CUSTER, A. M., D. D. S., DAYTON, OHIO.

The chief merit of the porcelain filling in its early days was due to its æsthetic quality. It was then only used as a necessity in conspicuous cavities. As the methods of manipulation were improved, as they naturally would be, the utility of the material was increased. It was found to possess other qualities besides harmony of color.

When the larger part of the making of a porcelain filling became a laboratory procedure by the taking of an impression and working from that, I made use of the porcelain inlay in teeth which were beyond even the application of a full gold crown. I refer especially to those almost hopeless cases of the molars in which the buccal half or more is entirely gone and the cavity has extended under the gum margin. The third molar is frequently found in this condition. It often presents with a cavity of such proportions that it would seem that filling by other methods or an attempt at crowning would not repay the effort. Here it is that the porcelain filling finds a useful place, and in extremely large cavities the aim should be to save the tooth from subsequent decay, and not so much the restoration of the full contour; for the frailty of the supporting tooth substance will not permit of exensive contour. However, many of the upper third molars are so far out of line, buccally, that very little masticatory function is borne by them, and here a fuller contour is permissable. But very little retentive shape is found here, and as a rule fortunately not much is required. The anchorage will often be sufficient when the decay has been removed.

The large buccal cavities of the first and second molars, when treated in this manner, are always very satisfactory, but here the contour must not be carried out to the full extent except where it approximates a neighboring tooth, where the contour must be full for the protection of the gum in proximate spaces.

The method is as follows: The roots having been treated, for nearly all these cases are pulpless, the cavity is packed tightly with a gutta-percha dressing in such a manner as to force the gum out of the cavity. At the next sitting the margins can then be seen, and the cavity is prepared for the filling. The most important step is the taking of an impression of the cavity. In this case the material should not be cement, but one which is placed by force. For this purpose, I prefer a stick of new modelling compound or dental lac, about the size and shape of a small pecan, but a little more pointed at one end. This is warmed at the smaller end so as to soften it about an eighth of an inch, and while in this condition forced into the cavity. It will be found that if the manipulation has been correct, that the soft point has been spread out in every direction in the cavity, and the hard center following it up has forced the material into every irregularity, and pushing the gum away, has taken a clear-cut impression of the cavity and its margins. A cement model is now made of the cavity, and by means of any small swaging device the matrix is struck up and the filling completed.

---

*Read before the Northern Ohio Dental Association, Cleveland, Ohio, 1906.

It will be seen, after taking the impression that this is largely a laboratory procedure, and one which, with the modern appliances, can be relegated with perfect assurance to an assistant. It is a very difficult matter to secure a good matrix from the cavity itself, but by the impression method it is quite easy and the results are most satisfactory. A filling made in this manner will possess a much better margin under the gum than can be made with any metal or cement filling, and in a manner almost painless to the patient.

While the details just described meet this class of cases in my hands, they will admit of some variation to suit each one's methods, but the essential thing is the use of a soft, and yet stiffly-backed, impression material in order that the gum can be forced well back of the cavity margin and all the details and irregularities shown.

◆

SOME PRACTICAL CEMENT INFORMATION.*

BY W. V. B. AMES, CHICAGO, ILLINOIS.

The treatment of the cement question on this occasion will be confined primarily to the oxyphosphates of zinc.

The chemical phenomena resulting in the production of what we call oxyphosphate of zinc depend on the tendency toward the formation of a basic compound, more or less insoluable, when an excess of basic oxide is incorporated with certain acids, more or less dilute.

This basic compound will assume different forms and consistencies, depending always on the manner of bringing together the ingredients, as is evidenced by what we all know of the variations resulting from different methods of mixing oxyphosphates of zinc used in dental procedures. I will not now go into the details of what I consider a proper mix of the average cement of this class, but devote myself to the effects of modifying a plain, simple combination of phosphoric acid and zinc oxid.

A practical, serviceable and manageable cement of this class must be something more than this simple combination. Heavy zinc oxid and syrupy ortho phosphoric acid, may, by careful manipulation, be made into a plastic mass, which will set quickly and answer fairly well as a filling for a cavity of a tooth devoid of sensitiveness and other complications, but such a formula is far from the ideal one for all round dental purposes.

The oxyphosphate of zinc cements used by you are invariably modifications of this simple formula, the additions to liquid and powder being for the purpose of reducing the caustic action of the acid upon vital tissue, giving greater ease in the mixing process, changing the setting quality, giving products of greater density and strength, imparting hydraulic properties in the setting stage, the cosmetic effect from pigmenting, etc., etc.

In addition to these effects from variations of formula, there is a very important modification depending upon the state of division in which the powder is furnished, and another consisting of the dilution by water of the acid phosphate solution. This latter is really a matter of formula rather than physical modification.

---

*Read before the Odontological Society of Western Pennsylvania, March, 1906.

To best open this subject, we will assume that it is conceded that there is a certain desirable consistency to which an oxyphosphate of zinc cement should be mixed for filling purposes, and another consistency most desirable for the setting of crowns, bridges and inlays. There is a certain homogeneous condition (stiff) best for filling, and for crowns and inlays cement should be as stiff as will admit of the piece going readily to place.

Along with this, the exigencies of one case and another are such that cement for one class of filling or crown setting may be much more prompt in its setting than for a filling or the placing of fixtures of various other classes. For this reason one will come to prefer one product for the making of fillings which can be quickly inserted, and when prompt setting is desirable, another for the setting of a single crown or simple inlay or the filling of some complicated or inaccessible cavity, when fairly quick setting is admissible, and to avoid naming too many conditions, another for the placing of extensive bridges, if one does not prefer to set these with gutta-percha.

Climatic or atmospheric conditions so alter the behavior of a given cement combination that these must be taken into consideration. Working in a crowded clinic room, for instance, in midwinter, one will have an experience with cement of a winter day very different than in using the same cement in his private surgery the previous or following day—all because of the humidity of the atmosphere. There are combinations suited to hot, humid atmospheres and dry, cool atmospheres. I cannot consistently give definite examples of cements for special purposes, but the selections are easy, since the cement for a tropical atmosphere must be slow of setting, while in a cool, dry atmosphere such an one would prove unsatisfactory. I ventured the statement a dozen years since, that far better cement work can be done in midwinter than in midsummer, and for the same reasons better cement work can be done in dry temperate climates than in equatorial regions, which might be illustrated by the sea coast and elevated interior of Mexico. The fact is often cited that natives of northern Europe are seen in this country with exceptional cement fillings. This can easily be attributed to favorable climatic conditions and to the main fact that the main training of dentists of those countries is in the use of plastics. I am not willing to admit that better materials are used in these countries than in the United States.

As has been mentioned, the state of division of a powder effects the setting with a given liquid, the finer the powder the quicker the setting. This is simply the result of the greater surface presented for chemical action. Experiments conducted some years since indicate that the strength of cement is enhanced by extra fineness of powder up to a certain point, but that absolute lack of grit causes a falling off in strength, the greatest strength being from a powder presenting a very slight evidence of grain. Each producer probably adapts the fineness of powders to the properties of the acid phosphate which most appeals to him, but in some instances, standard preparations are modified by the consumer to his apparent advantage, by the finer grinding of powder or the further dilution of the acid phosphate.

There is an easily perceptible difference in the behavior of cement with a given liquid when mixed with a light-colored powder (unpigmented), as compared to that mixed with one of deep yellow or gray, or brownish-gray. With what I consider the best scheme of pigmenting, i. e., by metallic oxids, the invariable result is a retarding of the setting, so that a producer making use of these oxids for his color-scheme will probably work to a happy medium with liquid and different colors of powder, unless he provides a range of setting qualities with liquids of two or more formulae.

In providing for these differences depending on pigmenting, a producer can at the same time provide against climatic or atmospheric conditions. Two liquids, fast and slow, may be used either independently, or in any blend, for providing against differences to be expected from using light or dark powder, or working in a cool and dry or hot and humid atmosphere.

The composition of cement liquids would be a hopeless subject in such a paper, even if it were desirable to attempt a survey of it. I will repeat that a reduction of caustic action, ease of manipulation, change of setting, greater strength and hydraulic properties, are among the effects of modifying phosphoric acid. An up-to-date cement has an acid phosphate containing non-alkaline phosphates which are themselves practically insoluble in normal saliva, instead of the sodium phosphate as found in glacial phosphoric acid, so generally used in the early products.

Phosphates of non-alkaline metals which notably cannot be used in modifying phosphoric acid in this work, are those of iron and nickel, which accounts for the damage caused in a mix of cement by the use of a steel spatula or one of nickel-plate.

It can safely be said that in the use of these phosphates the greater the proportion of phosphate to acid the slower will be the setting with a given powder. Also, that the heavier the solution, from lack of water, the slower will be the setting.

It is also necessarily true that the heavier the solution the greater will be the tendency to crystallization. Thus we see that addition of water must quicken setting, and abstraction of water must retard setting.

Exposure of cement liquid to the moist atmosphere of summer time results in the taking up of water. Exposure to the dry atmosphere of average office in midwinter results in the giving up of water.

Crystallization usually results in a retarding of setting on account of water used up as water of crystallization. It can be seen that a cement liquid bottle should be kept religiously stoppered, and that the standing of liquid about the stopper must be scrupulously avoided.

The problem of mixing an oxyphosphate of zinc cement is one which must be largely worked out by the individual operator. One cognizant of the proper feel of the cement beneath the spatula is in position to get good results. In a general way, some points of value can be given. Most often cement does not receive sufficient careful spatulation, yet it can be utterly ruined by over-spatulation. Too little spatulation gives a quick setting granular result, and over-spatulation gives cement which will never properly crystallize. Thus it can be seen that these features must be kept in mind, and that the operator must become familiar with the proper *feel* of the cement beneath the spatula.

One can easily be deceived as to the adhesiveness of a cement, from noticing one specimen firmly adhering to a glass slab some hours after the mix, and another being loose or easily removed. If carefully investigated it will be found that adhesion in the first case comes from imperfect crystallization, there being gummy free acid next the glass, while in the second case, the crystallization has been such that no gummy acid is present. Touching the tongue to the under surface of the pellet will give the evidence. Adhesion to glass after a few hours is a bad rather than good indication.

These causes and effects can be made to apply about equally to oxychloride of zinc, oxyphosphate of copper, and the silico phosphate cements.

In filling with oxyphosphate of zinc the ideal adaptation of cement to cavity wall is secured by taking from the mix at the thick creamy or crown setting stage enough cement to line the cavity walls, the balance of the mix to be made as stiff as it can be properly spatulated. This proper stiffness of mix is indicated by the cement rolling up after the spatula instead of remaining upon the slab as a smooth film.

If the operator is personally mixing his cement this creamy bit should be put aside, and the mix continued, after which the more plastic material may be used to line the cavity walls and the stiffer to complete the filling, the more plastic cement being largely expelled from the cavity in the later packing. If the mix be made by an assistant, successively stiffer portions may be taken by the operator during the mix to accomplish the same purpose.

An objectionable feature of the history of many cement fillings is the approximal waste by which there is soon present a V-shaped space, favoring impact of food against the soft tissues of the interdental space. To avoid or delay this condition, the scheme of approximal contour and contact must differ very radically in cement operations from that of gold or amalgam.

While matrices and a previous separation may be of value in making some fillings which should be given a buckling point of contact, clinical evidence indicates that a cement filling in any occluso-proximal cavity should have a much larger contact surface presented to the adjoining tooth. The cement should be packed firmly *directly* against the approximal surface of the adjoining tooth and in finishing, an interdental space created at the cervical *third* only.

By dismissing the case in this condition, floss silk can be carried through to the cervical space and withdrawn laterally after a few hours, and the history will be that food will not be forced against the gum septa for a series of years, if it be mixed properly stiff for filling.

I cannot pass calling attention to a means of carrying semifluid cement by a simple device shown to me by Dr. E. B. Spalding of Detroit, which is nothing more than a slender tapering broach, having a minute ring or loop formed at the end. This loop will engage and carry a globule of cement to any position.

the globule leaving the loop whenever brought into contact with a more extensive surface. By this simple instrument, semi-fluid cement can be most advantageously carried to any part of any cavity or enlarged pulp canal.

DISCUSSION.

Dr. H. E. Friesell, Pittsburg, Pa.—The essayist has treated the cement problem very much from the chemical standpoint, and when we consider that there are so many variations in the component parts of the various cements, we are inclined to agree with him that the cement problem is a problem of chemistry. Personally, we think it is a problem that has not as yet been solved by chemists, and we are waiting patiently for those who are devoting all their efforts to the investigation of cements to produce for us that greatly to be desired material, a permanent cement filling.

None of our investigators seem better fitted for this work than our essayist, who has been engaged in the subject for so many years that I dare not mention the number for fear of embarrassing Dr. Ames. However, the literature of dental cements bears record of his many years of investigation.

Some of the points brought out in the paper will bear repeating by way of emphasis.

Cement should be mixed to different consistencies for various purposes.

Heat and cold, dry and humid atmospheric conditions have a marked effect on the cement.

The neck of the cement liquid bottle should not be left wet, as is usually the case.

The exposure of the cement liquid to the air will modify its qualities.

In one respect we must take issue with the essayist, and that is in the departure from the normal contact point in approximal cement fillings The restoration of the normal contact point is absolutely necessary in order that the proper mesio-distal breadth of the tooth be restored, which maintains it in normal occlusion; and for the healthy preservation of the soft tissues in the interproximal space. These two points, oftener overlooked than observed, are of primary importance; and our inability to attain these results for other than a brief period requires that we consider oxyphosphate of zinc cements solely as a temporary material.

The oxide of zinc is soluble in the oral secretions, and it is probable that our cement-makers will be compelled to look to some other metallic oxide before they can give us a permanent cement. Of course, we have had a number of everlasting, insoluble cements in the advertising pages of the journals, but they last longer there than in the mouths of our patients.

While our cements are as yet only temporary, their period of usefulness may be greatly extended by proper care and procedure in manipulation. It is our personal belief that the life of a cement filling is affected more by the operator's manipulation than by the oral secretions of the patient.

There is undoubtedly a given proportion of powder and liquid which, mixed together, with a proper amount of spatulation, and placed in the cavity before its manipulation interferes with its crystallization, will give the best results in the life of the filling. Any departure from these proper requirements of powder, liquid, spatulation or condensation in the cavity can but interfere with the quality of the filling and shorten its period of service.

We do not know exactly what these proper requisites are, and can only be guided by judgment based on careful clinical observation. The fact that occasionally cement fillings last for years indicates that the operator came close to the mark.

A clean cement slab and spatula; the powder in small portions, thoroughly incorporated into the whole quantity of the liquid; a dry cavity, and the filling condensed and burnished with pressure under a celluloid matrix will, we believe, add to the efficiency of cement as a filling material.

W. B. AMES—The statement has been made that an oxyphosphate of zinc is only as stable as the oxide of zinc contained which is soluble in acids of sufficient potency. As it looks to me, the stability is more dependent on the basic phosphate formed, which accounts for the superiority of some oxyphosphates over others. It is this phosphate, cementing the zinc oxid granules, which I believe gives away, rather than the zinc oxid granules going into solution, thus accounting for a difference in stability of cements instead of all being of equal texture. Dr. Friesell's view of a proper contact point is no doubt correct, if considering a really indestructible filling material, but from my observation of results, I am still inclined to recommend the broad contact point with cement, until we have one much more durable than any at present available. I am hoping for such results with some of the newer silica cements that we can adopt with them the small contact point.

ORAL PROPHYLAXIS AND A PLEA FOR ITS ADOPTION.*

BY GRACE P. ROGERS, D. D. S., DETROIT, MICHIGAN.

A little more than half a century ago the subject of oral or dental hygiene was first considered by our profession. Every year since then a few men have tried to arouse interest in this all-important topic, but their efforts seemed to produce only temporary enthusiasm, which, however, was not in vain. The advocates were sincere, and even though they seemed to stand alone, did not despair, but continued to study the subject.

---

*Read before the Toledo Dental Society.

Any branch of a profession is the result of thought, effort, and time spent in one direction by earnest men, and so we have a new branch in our profession, Oral Prophylaxis. The advocates of oral hygiene laid a firm foundation, upon which Dr. D. D. Smith built so well the principles of Oral Prophylaxis.

These two subjects have so much in common that we seldom see any distinction made between the two. Yet I believe there are differences which we should recognize. For example: A man may take his daily baths and exercise, select his food carefully and eat it properly, surround himself with plenty of fresh air, never worry, drink all the pure water necessary, and, in fact, do everything he can to preserve his health and prevent disease. This man is living according to the principles of hygiene. However, if to his own care he add that of his physician, who, after putting the patient's system in a normal condition, will make regular examinations of the fluids and organs of the body, thus being able to anticipate and ward off disease, then he is carrying out the ideas of Prophylaxis.

Our patients may be faithful in the use of tooth-brushes, tooth-powder, dental floss and mouth washes, and to the best of their ability correct abnormal conditions and prevent disease in the oral cavity, yet this is not oral prophylaxis, but oral hygiene. On the other hand, if we place those mouths in an absolutely healthy state, and then, by regular treatments, stimulate and increase the resistance of the mouth tissues, direct these patients in their personal care, anticipate and prevent disease, control conditions absolutely, then we are practicing Oral Prophylaxis.

In oral hygiene, it is necessary for the dentist to do much in the way of removing accumulations which a patient under prophylaxis treatment does for himself. In oral hygiene the care of the mouth is an unpleasant task for both patient and dentist, while in oral prophylaxis it is a pleasure.' The former prevents some disease, but the latter prevents more.

A few years ago oral prophylaxis was spoken of as a treatment which would cure pyorrhea and prevent some decay. Now it is a specialty in dentistry, not for dental nurses, but for graduates. It is that branch of dentistry which has for its object the reclaiming of the mouth tissues to a state health and preserving them in this condition by increasing their resistance against hurtful influences and by anticipating and removing the cause of diseases in them. According to our definition, we find that we have more than the name implies, for the meaning of the phrase is the prevention of disease in the oral cavity by manipulative effort. No mouth is healthy which has not been under treatment, therefore we *must* precede our preventive treatment by a curative one.

To those who have not given attention or any thought to the work, oral prophylaxis suggests tooth-cleaning and the monotonous task of polishing teeth once a month, which seems nonsense and unworthy of their time. Tooth-cleaning is indeed unworthy of your time unless it is to be followed by regular treatment. The first time a patient presents himself for the work, it is always necessary to clean out the oral cavity, and until he has learned to do it for himself, you must help him. As soon as you find he is able to give his mouth the proper care, you have the right to reprove very severely if anything has been neglected. It may take some time for him to learn, as it is not an easy lesson, so keep up his courage and your own patience. We *must* drop the phrase "tooth-cleaning" from our vocabulary and educate our patients to do the same. If a woman were to go to a hair store and tell the person in charge that she wanted her hair cleaned, she would be met with a cold look of disapproval. If you are interested, ask your manicure to clean your nails some time, and watch the effect. Why is it that Mrs. Smith will ask for a shampoo and a manicure in the morning, and on her way home will drop into her dentist's office and ask for an appointment to have her teeth cleaned?

Who is responsible for this condition of affairs? People have been educated in other lines, but not in dentistry, and until they are educated in our direction, our services will not be appreciated. It lies with ourselves as to how soon a change will be made. It is our own fault that we are asked to clean teeth. No dentist should ever perform this work as is done in nearly every dental office in the country. Every time you do it, you are lessening your self-respect, lowering yourself in the estimation of your patient and your profession in the eyes of the world. I hear some one say, "We are doing our patients a good service." Yes, it is a good service, but so small. It is true that you relieve their mouths of large quantities of irritating and infectious material, but it will be but a short time before there will be the same amount of deposit in that mouth. The tooth surfaces are not smooth and the roughened enamel tends to catch and hold coatings, food particles, germs and stains. The patient does not know how to care for his mouth and soon you will have a recurrence of the same conditions which were there before. The task was a disagreeable one, both for you and your patient. Of how much value was your service? Every dentist should take a decided stand and positively refuse to clean any patient's teeth unless he can follow up the work by systematic treatment until he has placed that mouth in a healthy condition. It is as much your duty to do this as it would be to refuse to only partially remove the decay in a cavity before filling. Patients must be impressed with the importance of the work. They must be taught the difference between this work and that to which they have been accustomed. Do not ease your conscience by saying your patients do not want the treatment. As soon as they know what it is and have experienced the difference between a healthy and an unhealthy mouth, they will want it.

Oral Prophylaxis is a broad subject, and to simplify it, let us consider its different phases separately. There are three, all of which are equally important and without any one of which you will not meet with success: (1) Instructive, (2) Technical, and (3) Executive.

With regard to the first, let us consider what is necessary when a case is first presented to us. We will take, for example, a mouth such as the general practitioner sees in his office every day and to which he pays no attention after he has filled all cavities and made any other necessary repairs. The gums show a state of marked hyperemia, and have receded in several places. Where there is recession, the teeth are sensitive at the necks. There is tartar, both salivary and sermunal, also much soft accumulation and many stains. The patient is usually dismissed without any attention being paid to this condition, which is a serious one. It may be that the dentist is not able to recognize the difference between this mouth and a healthy one, because he may never have seen the latter. If he is able to recognize the distinction, he probably does not wish to be bothered, is too busy with other work, or is afraid he will not be able to get a good fee for his services. One writer has said, "There is no service so little appreciated by our patients and of so little remuneration to us as the care and attention we bestow in the treatment of the diseases affecting the gums. So much so is this the case and so ignorant do we find our otherwise intelligent patients in regard to these conditions that many of us give only casual care, knowing if we go further that our object will be misconstrued and our solicitude will be taken for a desire to collect a fee."

Our patients *are* ignorant in this regard because *we* have not taken the trouble to instruct them, and there is no one else of whom they can learn if they would. Who taught them that cavities should be filled, or that an aching tooth could be relieved? No one, I am sure, but members of our profession. No one has told them that it is unnatural for gums to bleed or that pyorrhea can be cured. In fact, most dentists give their patients a mouthwash to stop bleeding of the gums (without removing the cause of the trouble), and tell them that there is no cure for pyorrhea, that sooner or later they must lose their natural teeth and have artificial substitutes.

This spring, as usual, hundreds of men will be graduated from the dental colleges of our country without any knowledge or experience in the treatment of diseased conditions of the gums or peridental membrane. The graduate may be very keen in finding cavities and root canals, but he is totally blind to the condition of the soft tissues. We are taught to take care of the house and to let the foundation take care of itself. The result of all this is that *we* members of a profession support a specialist whose work is to *extract teeth*. Never in the history of dentistry was there anything which reflected so much disgrace upon us as this fact. It is time to awaken to the importance of saving the human teeth, not by filling alone, but by keeping the soft tissues in a healthy condition.

But let us go back to our patient. He does not know his mouth is not healthy. He may have noticed the gum recession, the sensitive teeth probably annoy him, yet he cannot appreciate that this sensation is not due to cavities. Unless you question him he will say nothing about his gums bleeding, either because he thinks it natural, or he has become so accustomed to it that he does not notice it.

One should never begin operations without having made a detailed record of the case. Neither should he make one move toward treatment until he has, with hand and mouth mirrors, shown the patient the condition of his mouth. First call his attention to the color of his gums. Find, if you can, a pink area, and with this compare a deep red, perhaps a purple, and then point out and explain the cause. Point out places where the gums have receded and tell him why they have done so. Instruct him thoroughly as regards all the conditions present, and the results of these harmful influences, unless you can have control of his mouth. Now, to many of you this may seem a waste of time involving too much detail, but you will be rewarded many times if you will only take the trouble. If you simply tell your patient that he needs treatment and begin to work at once, he will wonder what you are doing, and, while he cannot help but realize the change after several treatments, he will not fully appreciate one-half that you have done for him, and may question the value of time spent in this way.

If such a patient has been under your care for a number of years, it is your *fault* that his mouth is in this state, just as much as re-decay under one of your fillings would be your fault. So begin at once and try to make amends for this neglect, by restoring the unhealthy tissues to health. Patients must be taught *how* to brush their teeth, the exact number of times each day, *when* and *why*. Give them a practical demonstration in the method of using the brush, powder and floss. The thorough mastication of food is important and you must impress your patients with this fact. Intelligent patients will be interested in the process of digestion, the cause of decay, any phase of bacteriology, anatomy, and physiology, all of which have a certain bearing upon this work. We need not stop working to impart knowledge, but should cultivate the habit of talking and educating our patients while working. You will raise yourself in their estimation if you show them that you know something more than the mechanical principles involved in filling teeth. You will, of course, find some who are not interested, but for those few do not neglect to instruct those who are interested.

The technical aspect demands our attention as much as the other two. It includes skill, patience, and thoroughness.

There are few operations in surgery more delicate or which require more skill than the scaling in pyorrhea pockets, and you will be called upon to treat many cases of that much-dreaded disease. It is only by developing the sense of touch to a high degree that we can hope to succeed in oral prophylaxis. You will need patience, for perhaps after working for one hour over a loose tooth you will think of what you might have accomplished in that same length of time if you had been working in gold. "I might have something to show for my work," you say. But think one moment—are you not giving your patient a better service by saving this one tooth than if you placed a six-tooth bridge in his mouth in its unhealthy condition? The latter would last but a very short time, and by its holding deposits and soft accumulations would really hasten the loss of the abutments. Your patients come to you for your very best service, and you should give it to them regardless of your preference for certain kinds of work. As regards thoroughness, you must be conscientiously thorough. Unless you are, you will fail to obtain good results, which will discourage you in your efforts, as well as lessen the patient's faith in you and in the treatment. The patient must be thorough in his personal care, or improvement will be slow. If you ever find any soft deposits, even on the distal surface of a third molar, you should insist upon better care of the mouth. The thorough sterilization of instruments used cannot be too strongly emphasized. For, in the first few treatments you are dealing almost entirely with the soft tissues, and there is much danger of infection unless due precaution is taken.

In order to carry oral prophylaxis to a successful issue, it must be put on a systematic basis, and this demands the third phase of our subject, executive ability.

You must not let your patients dictate to you and tell you how often they want treatments, for you must govern and control everything absolutely. The true professional man understands his subject better than the layman, and this fact is the reason for the public's wishing to employ his skill. How can he give them his best service if he allows his judgment to be swayed by their ignorant notion of what should be done. A professional man should be an absolute monarch in his own office. See to it that every patient is well equipped with everything that is necessary to obtain the best results, viz: tooth-brushes, powder, dental floss, and a good mouth-wash. Do not allow the patient to select any of these, but insist that he use what you prescribe. A record should be kept of every case under treatment, and a note of conditions made after each treatment.

If you are a specialist in dentistry, oral prophylaxis expects much from you, but if you are in general practice, she demands more from you. To say that we cannot give up our "valuable time" to prophylaxis is only another way of saying that the prevention of disease is unworthy of our time. If the regular practicing dentist has too much work to do the admittedly important work of preventing tooth destruction, would it not be better to have a few patients cared for in every way, with healthy mouths and teeth that are brilliantly polished, or would you have many patients whose teeth are constantly needing repairs, with inflamed tissues and mouths full of infection?

Some claim that few men like the work. They do not like it because they do not know anything about it. Nothing will more quickly or surely raise your ideals or inspire you with a desire to do better work than oral prophylaxis. It has been said that tooth-polishing is a tedious, irksome, monotonous task. This is not true if the operator can see beyond the end of his stick. If he will only think of the far-reaching results of his work, he will enjoy every stroke he makes. There is stimulation being given the gums, the teeth, the peridental membrane. Health is being imparted to all the mouth tissues, and in many cases the general health is being improved. Also, mouth diseases of local origin are being prevented, and the gratitude of the patient is no minor consideration, for you are rendering him a service with which no other can compare.

If we would give our patients our very best services, shall we close our eyes to our duty so that we may not see the wholesale destruction of the peridental membrane and tooth tissue going on, because we would rather be making inlays or removable bridges? You may make, if you please, a porcelain inlay. It may be perfect in adaptation, contour, and color. Yet what have you? You have a *repair* which, no matter how good, is never as good as nature gave. Would you not be giving mankind a nobler and greater service if you were spending your time in studying the causes which produced the need for a repair, and, insofar as you were able, were preventing these conditions?

It is your duty to at least make a study of oral prophylaxis if you are in doubt about its importance, and do not think that because ignorance is bliss, it would be folly to be wise. Exchange treatments with another dentist until you both have healthy mouths. You will be so pleased and grateful that you will put some patients on regular treatment at once. But do not take up the work unless you are going to do it as you should, and take it up in earnest. It is a great work, and we do not want dental nurses or unprofessional men trying to do anything with it. If you cannot take it up whole-heartedly, let it alone entirely and confess that you know nothing about it. Do not try to cover your ignorance on the subject by talking against it and thus retarding the efforts of those who are trying to advance it.

Some one has said, "The history of any country is the biography of its great men," and so the history of dentistry is the biography of its great men. If we could have a biography of Dr. D. D. Smith's life, we might understand why dentistry is taking this vast stride forward. His life since he began the work has been one of entire self-sacrifice to his patients and to his profession. We owe him a debt of gratitude which can only be paid by our untiring efforts to advance this great work.

A very prominent man in the profession says he can make more money doing other work, and therefore does not intend to give his time to oral prophylaxis. He says he is in the profession for the money that is in it. It is decidedly unprofessional to take that attitude; we are not in a business, but in a *profession*, and we should not forget this: "A professional man is one who gives his life to the pursuit of his art or calling with unselfish devotion to those whom he is to serve, using every means at his command to perfect himself, both technically and scientifically. Under this definition few qualify, but all can who will."

The rank of dentistry among the professions depends upon the advance of oral prophylaxis. Are you satisfied with her present rank? If not, "put your shoulder to the wheel" and let us all move forward.

TREATMENT OF ABSCESSED TEETH.*

BY G. M. MULLEN, D. D. S., CREIGHTON, NEBRASKA.

The subject which I present to you is of such vast importance to the dental profession, and each practitioner, and covers such a wide field for discussion and difference of opinion, that it behooves one to know how to present the subject best. I have not written this paper with the idea that I am presenting all new and original methods of treatment, but rather to elicit a full and hearty discussion of the subject; if the paper accomplishes this, I will be amply repaid for the writing of it.

I will not make an effort to give methods of treatment for all kinds of abscesses in such a short paper, but merely those which are met with most frequently in daily practice.

---

*Read before the Nebraska State Dental Society, 1906.

ACUTE ABSCESS HAVING A FISTULOUS OPENING ON THE GUM.

Wash the opening and surrounding tissue with pyrozone, following it with a strong solution of carbolized water, then with alcohol. Dip the lancet in carbolic acid, place the point of it in the center of the tumor, resting the fingers on an adjoining tooth; make a free opening into the root of the tooth, cutting parallel with the long axis of the tooth. Apply the rubber dam, open into the tooth through the cavity, if it has one; if not, on the lingual surface—assuming this to be an upper central—and with a barbed broach remove all pus and dead nerve, making it mechanically clean. Nothing will take the place of a mechanical cleaning in the treatment of all forms of abscesses. With an abscess syringe force through three or four syringefuls of a solution of bicarbonate of soda or carbolized distilled water; the former is preferable, as it makes a soapy solution and will slide through, while an agent that has a slight coagulating property will not pass through so readily till the passage is clean. If the solution is forced through with a good deal of force, its all the better, as it cleans out all the confined pus in the irregular places. Paint the gum around the fistulous opening with vaseline and pack cotton around it to absorb the carbolic acid, if any excess should escape. With a few drops of 95% carbolic acid in the abscess syringe, place a rubber cone on the point large enough to fit into the orifice, firmly pressing the cone against the walls, and force the carbolic acid through till it turns the tissue around the fistula white; dry out the canal with alcohol and warm air, and fill.

CHRONIC ABSCESSES WITH FISTULA.

The treatment for the chronic abscess having a fistulous opening is practically the same, unless in very stubborn cases, when it will not yield to this treatment; then force carbolic acid through the root, holding a piece of unvulcanized rubber on the opening of the fistula and force carbolic acid through and against it; the object is to make the carbolic acid go into all the little irregular places around this absorption to burn out the pyrogenic membrane, dead and decomposing tissue. It is not best to fill the root canal then, as in the acute cases; put in a treatment of 10% solution of chinosol; leave it in four or five days. When the patient returns, if the fistula is still open, or if it is closed and pus coming down through the root canal, then fill the root canal with phenosulphonic acid, and with soft rubber a little larger than the opening, and with a blunt instrument, force a little through the apex, enough so it will burn and the patient will feel it; dry out with alcohol and warm air, place in a treatment of campho-phenique and leave in for a week, at which time, if there is no pus, fill; if there is, go through the fistulous opening and curette the socket and root, the root being first filled. It is seldom necessary to resect the end of the root in the chronic abscess, as the absorption of the end of the root is not as great as in the blind abscess; the reason is, after the acute abscess becomes chronic, the opening thereafter through the gum is easily established by the boring of the pus; therefore the end of the root is not as liable to be involved as in the blind abscess.

TREATMENT OF BLIND ABSCESSES.

Treatment for blind abscesses, or the kinds that have no opening or exit for the pus, will be the next taken up. We meet cases where the pulp dies, and although receiving no treatment, remain dormant for years. We are called upon sometimes to remove imperfect fillings, or perhaps crowned teeth, and find the pulps dead On opening up the root canal we occasionally find it all dry, and possibly but little odor; again we open up others and find them perfectly dry and not a single sign of anything in them. In those cases we are pretty safe in assuming that nature has closed the apex of the root, and all we need to do is to render the canal antiseptic, simply as a precautionary measure, and fill the root.

Another class of blind abscesses we meet frequently is when we open up the tooth, pus will rush down in large globules; the treatment is to absorb all the pus possible with cotton, then carefully wash out with peroxide, being careful not to force any of it through the apex when we haven't any fistulous opening; work it into the canal with a smooth broach, allowing it to boil out the pus, continuing this till there is no farther effervescence; absorb again with fresh aseptic cotton, flood the canal with alcohol so it will float out any particles that may be in it; absorb again with cotton and dry the canal out thoroughly with warm air. If the case, to begin with, has a foul-smelling odor and the dentine is permeated with this odor, with some cotton on a smooth broach force some oil of cloves or "1-2-3" into the canal, and after a few moments absorb it out with cotton, dry out with alcohol and warm air, thereby deodorizing the dentine. Place in a treatment of "1-2-3", campho-phenique or creosote, leave for a week, and if found clean, dry, and no sign of pus or odor, proceed to fill.

Sometimes stubborn cases and cases of long standing have a good deal of absorption of bone around the apex, and the apex of the root is absorbed or a deposit of serumnal calculus, on the root and will not yield to the above treatment, then force through the apex some pheno-sulphonic acid—just a little. It will smart and burn for five or ten minutes, and then pass away. Seal in a treatment of it and leave three or four days, and when the patient returns, if there is no pus or odor, fill the root, but if there is a free discharge of pus, render the canal antiseptic, fill it and open through the gum; inject a little cocaine or suprarenal extract and cocaine into the part you are going to open into, use a strong, heavy lancet, make a free incision through the tissue and bone till you come in contact with the root; pack with gauze and leave for two or three days. When the gauze is removed there will be no hemorrhage, and you will be able to see what you are doing. With the small spoon excavator go through that pocket and explore all around the root and socket, and see if there is any serumal calculus on the root, a thing which occurs sometimes; also see if there is any deposit on it; if there is any, scrape it and clean it well; if the apex is absorbed, resect the root and curette the walls of the socket, removing all the dead or carious bone; flood it out freely with carbolized distilled water, then pack with gauze, using aristol (the iodoform having such a bad smell and taste would not be suitable); keep it packed, making it heal from the bottom first; never allow your opening to close over until this pocket in the bone is closed over. A case of this kind will get well in from two to four weeks. This form of treatment can be used advantageously in cases of chronic abscesses having the fistulous opening (that is the curetting and scraping the walls and the apex of the root).

In all forms of abscesses, when the patient comes to you, and the tooth is too sore to drill into to make an opening (and that is always the primary step, if it can be accomplished, as it removes the dead and mortifying nerve and gas); and if you think it best to aid the pus in coming through the gum, instruct the patient to use the hot-water bottle or hot napkin, being sure not to allow it to open on the outside of the cheek (one can generally determine that, as a hard, round spot about the size of a quarter and glossy-looking will appear on the cheek before it breaks). Before that stage has been reached, raise the cheek and press on the gum, and if the pus is through the bone and process, and not through the soft tissue and gum, it will feel fluffy and look a light-yellow color; and if you are satisfied that the pus is liable to follow the striation of the muscles and to break on the outside of the cheek before coming through the gum, lance the gum deep so as to have the pus escape through the gum and not on the outside of cheek (the principal thing is to establish opening inside, not on cheek, if broken, etc.), as it generally leaves an unsightly scar if it does. Again, if the tooth is too sore to open into, and you have determined that the pus has not progressed far enough to aid you, and it doesn't seem advisable to open through the gum, then administer to the patient a good cathartic, apply counter-irritants—as iodine, iodine and aconite on the gum, and instruct the patient to take a hot foot bath before retiring, using some mustard and salt in the water. Wait a few days and nature will aid in the pus coming through, with the minimum amount of pain to the patient.

OPENING INTO ABSCESSED TEETH.

A word at this time in regard to opening into sore teeth is not out of place. Soreness of a tooth does not always indicate an abscessed tooth nor a dead nerve. It may be a slight inflammation of the peridental membrane or hyperemia of the pulp—either the active or passive—which may cause the soreness; overuse or lack of use of the teeth may cause it. Sometimes an application of iodine and aconite in equal parts applied on the gums around the sore tooth will relieve what we thought was an abscess or beginning of one.

The following plans will aid materially in opening into all forms of abscessed teeth. Where they are sore—apparently too sore for the patient to tolerate in opening into—press slightly on the tooth first, doing that a few times, then slightly increase the pressure, and finally the pressure will be endured with much less pain than if pressed upon hard at first. A second plan: tie a silk floss around the tooth, leaving several inches of excess string to the distal and mesial of the tooth, tie ends together, throw loop over index finger and thumb of left hand, rest the finger on tooth mesial and thumb on tooth distal of the one being opened into. Another plan: for instance, you were going to open into a lower first molar; dry with napkins and absorbent cotton the three surfaces of the two bicuspids in front of it and the two molars back of it, mix some plaster of Paris, using the water slightly warm and placing a pinch of salt in it so it will harden quickly; place the plaster of Paris around and over the five teeth mentioned being sure to get it well down around the crowns and close to the gums; before it hardens remove the plaster from the occlusal of the tooth to be opened into; after the plaster hardens proceed to open into the tooth, as the pressure will then be divided equally on the five teeth.

A TOOTH-SAVING AGE.

In conclusion, I will say that this is a progressive age, an age of advancements and progress in all lines of work, skill and thought, and we as dentists should advance with the times—this is a tooth-saving age; at least it ought to be, from the number of dental colleges and the courses of study and the number of graduates that go out each year from them. The day for the physician, horse doctor, blacksmith and barber pulling teeth has gone. The dentist of today and the future will be expected to possess the necessary skill to save teeth and not pull them. The treating and saving of abscessed teeth is the most difficult and trying ordeal the dentist has to contend with. Nevertheless, we owe it to the public, to ourselves, and to the profession.

PRESIDENT'S ADDRESS.*

BY A. HUGH HIPPLE, D. D. S., OMAHA, NEBRASKA.

In accordance with our constitution, the president, upon retiring from office, is required to deliver an address, and he has the privilege of choosing his own subject, of saying what he likes and of taking as much time as he pleases to say it. He is not supposed, however, to prepare an essay upon a scientific subject connected with our profession or a paper dealing with some particular phase of dental art. What he is expected to offer could not be called anything but an address. He is supposed to return thanks to the society for the honor conferred upon him by electing him its president and to express regret that he has not been able to accomplish as much as he had hoped to do. He is supposed to congratulate the society upon its achievements in the past and predict for it a glorious future. He is supposed to make some allusions to our honorable calling and the ethics of the profession. He is supposed to make suitable references to dental education and dental legislation, and sit down. In other words, the annual address of the president is largely a perfunctory affair, and the secretary, in arranging the program shows excellent judgment in having it delivered at a time when the attendance is smallest and when it will least interfere with the real work of the meeting.

---

*Read before the Nebraska State Dental Society, 1906.

Now, if you will kindly consider that I have covered these various points by simply referring to them, much valuable time will be saved, and I will need to detain you but a few moments in presenting the one thought that I desire to leave with you. It is no new idea that I have to present. Nineteen hundred years ago the greatest Teacher the world has ever known announced it to his followers as the central axiom of right, the concentration of human morality and the supreme test of social justice: "Whatsoever ye would that men should do to you, do ye even so to them."

I am not here to preach a sermon, but it cannot be too strongly impressed upon the minds of all of us that the application of the Golden Rule in the everyday affairs of life would solve all its complex problems. If we were to follow its teachings in our professional work, we would always render our patients the very best service in our power and bring to bear upon every operation all of our knowledge and skill. If we were to follow its teachings in our relations with our fellow-practitioners, we would never seek to obtain an unfair advantage over them in any manner; codes of ethics would be unnecessary, impeachment trials would be unknown, and we would all dwell together as members of one harmonious family, each trying to assist the other, and covering his faults with the broad mantle of charity and brotherly love. This is a commercial age, and altruism is not as common as it should be, but I am convinced that the man who has the best digestion sleeps the best at night, lives the longest, and enjoys life the most is the one who comes nearest to living up to the rule, "Whatsoever ye would that men should do to you, do ye even so to them."

ADENOIDS AND THEIR RELATION TO DENTISTRY.*

BY KING S. PERRY, IRWIN, PENNSYLVANIA.

The term adenoids was first given to growths in the naso-pharygneal cavity, by Meyr, who was first to discover them in 1868.

I consider them of such importance to the dentist as to merit a study at his hands, as there is quite a train of evil following this pathological condition. The one of most importance to our specialty of medicine is mouth-breathing. That these growths are the cause of mouth-breathing in children, in possibly 75% of the cases, cannot be denied.

Those of us who have turned our attention to orthodontia know that this is the cause of conditions noted by Dr. Angle, coming under class II, division I. In reference to this he says: "It seems quite probable that all of the conditions have been gradually brought about as a result of mouth-breathing, at least in a very large percentage of cases. It therefore becomes apparent that the treatment should be directed toward the restoration of normal breathing, and it is now the belief of the author, after much experience with these cases, that failure in maintaining corrected occlusion will sooner or later follow, unless normal respiration be established."

"Treatment of the occlusion without attention to the nasal tract is but the treatment of symptoms without removal of the cause."

"For that reason the advice and co-operation of a competent rhinologist should early be enlisted, in order that both lines of treatment may progress simultaneously, yet we are much at the mercy of the rhinologist for the success of our efforts."

If mouth-breathing is considered of such importance by Dr. Angle, in treating malocclusion, why not look into the cause of this pathological condition.

The condition produced by mouth-breathing is an apparent overdevelopment of the upper jaw. If you will note, he says: "An apparent overdevelopment," for Dr. Angle maintains he has seen very few cases of this kind, if any, it being the result of distal occlusion, or recession of the lower jaw and modified functions of the lips and cheeks, caused by mouth-breathing. Now, this being the condition as set forth, should it not be within the realm of dentistry to be able to point out the cause of this trouble and suggest the remedy. Certainly our profession should be able to do this, and with this object in view, this paper has been written.

---

*Read before the Lake Erie Dental Association, Cambridge Springs, Pennsylvania.

The growths are found in the vault of the naso-pharynx, or in the cavity back of the soft palate. They are found mostly in children between the third and twelfth year, but you will occasionally find them in adults as well. Coakley states that he has seen the condition existing as early as the third month. It is held by many authorities that it is a congenital condition, often every member of a large family of children being affected and frequently both parents.

The tendency to adenoids is not so marked in warm, dry climates as cold, damp and changeable ones. They increase in size up until the seventh year, as a rule, at which time the growths become stationary, very often disappearing about puberty. They are found in those whose condition is known as "lymphatism"—or persons in whom there is a superabundance of lymphoid tissue are peculiarly susceptible to them. They, like the pharyngeal tonsil, are composed of masses of round cells held together by a small amount of connective tissue, and the amount of connective tissue found in adenoids is much less than that found in tonsillar tissue.

The symptoms of adenoids are usually so well marked that when one has once seen a case, he can usually recognize it from the symptoms alone. Or he can gather from the mother or nurse sufficient data to confirm the diagnosis.

In very young children we have chronic catarrh, showing itself in a persistent nasal discharge, which may be almost continuous or intermittent, depending on the weather—recurring in damp and subsiding in dry summer weather, or ceasing entirely. In older children the obstructive symptoms prevail, which are noted on mouth-breathing, nasal voice and difficulty in blowing the nose. Sometimes inability to do the latter is a marked symptom of an aggravated case.

Mouth-breathing in aggravated cases is resorted to awake and asleep alike, but very often only in sleeping. Two other symptoms to be noted, especially in very young children, are frequent attacks of ear-ache, and persistent hoarseness or huskiness of the voice. In older children you will have a dull expression, sort of stupid or semi-idiotic, and hearing is impaired in quite a number of cases. Blake, of Boston, found this true in 39 out of 47 cases examined, and in 35 of these, marked improvement in hearing followed operation upon the growths. Deafness may be due to mechanical causes or to inflammation of the ear. If of school age, they are often mentally deficient and hard of hearing, to such an extent as to be classed by the teacher as her "dull pupils."

In making an examination for adenoids, it is proper to note the teeth, the arched condition of the hard palate, if the second teeth have erupted, especially how irregular and overlapping they are, as well as crowded forward. In depressing the child's tongue note a mass of white egg-like mucus descending along the posterior pharyngeal wall. In most cases you can confirm your diagnosis, as made from history and observation, by an examination of the naso-pharynx with the finger. To do this, the operator should stand behind and slightly to the right side of the child, who should be seated in a chair if possible. Your left hand should encircle the head and neck of the child with the right side of the head being pressed against the operator's left side. With an assistant to hold the child's hands, the patient is now told to open the mouth, the left side of the cheek is to be pushed in between the teeth, by the thumb of the left hand, the operator inserting the forefinger of his right hand in the mouth, carrying it back until the posterior wall of the pharynx is felt. If the finger is now turned towards the naso-pharynx, it can be pushed behind the soft palate into the naso-pharyngeal cavity. Here, instead of thin mucous membrane covering the bony structures, there will be felt a soft mass, more or less completely filling the cavity, the feel of which is not unlike a bundle of worms. The finger when withdrawn will be covered with mucus and blood. No blood will be found if the cavity is normal. Always bearing in mind that a polypus may project into the naso-pharynx, a fibroid tumor, or a malignant growth, which is of rapid formation, accompanied by pain. A fibroid tumor is harder, does not bleed, and is freely movable.

The operation for the removal of adenoids is attended with very little danger when properly performed, while the consequences of allowing them to remain are so injurious to the patient, especially their tendency to cause impairment of hearing, the almost positive results on the formation of the jaws, shape of the mouth and lips, thereby causing one of the worst irregularities that we have to deal with in the practice of orthodontia. In addition these growths often produce a general malnutrition, owing to the constant interference with sleep, the obstruction to respiration, and the many reflex causes, such as incontinence of urine, asthma, and many others.

When thoroughly removed statistics prove that they do not tend to return in 90 per cent. of the cases; where an imperfect or partial operation is done the chances of their return is much greater.

The tendency, as noted, to decrease in size after the fifteenth year, together with the great enlargement that takes place in the naso-pharynx at about this time, may suffice to restore partial or complete nasal respiration. It is not safe to advise waiting for this change to take place, as the child's general health, hearing, the development of the jaws and features may be everlastingly impaired by this time.

Treatment consists in their removal. Absorption by internal medication is possible in but few cases. Bosworth reports the best results from the syrup of the iodide of iron, which must be given in doses from 10 to 15 drops three times a day for a long period, this to be combined with cold sponging, especially of the throat and chest, and general precaution to prevent recurrence of colds, and if possible to pass the winter in a dry climate. These measures may succeed when the growths are small, and when the symptoms are more catarrhal than obstructive. Every marked case will ultimately require an operation to effect a cure; operation during the spring and summer is preferable, but may be performed at any time.

Some very expert operators prefer to do without an anæsthetic, but this is not prudent; as it may result in an imperfect operation. Complete anæsthesia is to be insisted on, except in very young children, or where the growths are small, soft and very spongy. These may sometimes be rubbed off with the finger, without giving the patient any idea what is being done, and this can be accomplished under the plea of making an examination. It is recommended by Coakley to employ ether when the patient is over six years old, and chloroform under that age. The anæsthetic is to be given in the ordinary recumbent posture. As soon as full anæsthesia is obtained the child's body is moved, so that the head falls sharply backward over the end of the table; this is necessary in order to facilitate getting rid of the blood, for it is found ordinarily that the patient has lost from two to eight ounces of blood.

The instruments for use in the operation vary according to the individual operator. Those highly recommended are the Loewenberg forceps, Gottstein curette and the Chappell curette, along with a mouth gag. The manner of using the instruments will be briefly alluded to, so as to give some idea of their use.

A mouth gag is inserted between the molar teeth; you make an exploration with the forefinger of the right hand to ascertain the situation and extent of the growths. You next insert the forceps, closed, behind the soft palate and into the naso-pharynx, using the left hand to depress the tongue. The forceps, properly inserted, should be opened widely and pushed into the soft, doughy mass of tissue. By closing the handles of the forceps you will include a large amount of tissue in the jaws, while giving the forceps a rocking motion from side to side will tear off some of the adenoid tissue. After this insert your finger and ascertain the situation of the remaining tissue. If any be found, remove that with the forceps. After this the Gottstein curette is passed behind the soft palate, with the cutting blade reaching the upper anterior portion of the roof of the naso-pharynx; by a sweep downward you will remove most of the tissue. Repeat this two or three times. The small Chappell curette is for removal on the sides, in the fossa. Hemorrhage is very brisk, much of the blood flowing out through the nose. If the mouth fills turn the head to one side until it is empty, and resume work.

The entire operation consumes two or three minutes and the hemorrhage usually quickly ceases. The after-treatment consists in putting your patient to bed and keeping him there until all danger of hemorrhage is passed, which is usually about three or four hours. In winter patients should stay indoors for a week, as they catch cold easily, thus predisposing them to an acute inflammation of the middle ear. Use a fluid diet until deglutition becomes easy, which is about the third day. If necessary to syringe the nose, use a solution made from Siler's tablets. In case of very severe hemorrhage after the operation, which is very rare, the naso-pharynx is to be plugged with absorbent cotton, or a sponge that has been immersed in a strong solution of tannic acid and water.

It often happens that mouth-breathing continues after the removal of adenoids, frequently as a force of habit on the part of the patient. This will have to be broken up by attention being called to it and bandaging the mouth at night. The habit of mouth-breathing must be broken up at all hazards. Surgeons' adhesive plaster may be used to hold the lips together in sleep.

It might be possible to use somnoform for anæsthesia, after becoming familiar with its use, believing it would retard hemorrhage to some extent, at least, and would be more pleasant to the patient and operator alike.

SUGGESTIONS

A NEW AND VALUABLE METHOD OF MAKING MATRICES.

R. Ottolengui, New York.

I recently received from Dr. Emil Schreier, of Vienna, a suggestion which, after trial, I unhesitatingly pronounce to be one of exceeding value in the technique of all kinds of inlay fillings. There can be no doubt but that the stability of an inlay is much enhanced by the depth to which it may be introduced into the cavity. Heretofore in very deep cavities it has been necessary to lessen the depth by strata of cement or other material. Dr. Schreier suggests the use of what is known as gold beaters' skin. This is an exceedingly thin bladder-like material which gold beaters use when beating the metal into foil to avoid tearing.

In making a matrix the gold beaters' skin is placed on the under side of the foil and therefore next to the cavity walls. With ordinary care the gold can thus be forced to a very considerable depth without tearing. After the edges are thoroughly burnished the gold beaters' skin is easily removed and the matrix can be returned to the cavity for a final adaptation to the walls.

In the production of either porcelain or gold inlays by the so-called impression method the gold beaters' skin is of equal value, as the matrix material can be forced into deeper grooves and undercuts without tearing, than can be done without this protection, as the gold beaters' skin acts as a cradle to support the matrix while it is being carried to place.

Immediately after hearing from Dr. Schreier I communicated this information to a number of friends, and one of these, Dr. R. M. Gaylord, of New Haven, Conn., while awaiting the arrival of some gold beaters' skin which he had ordered, experimented with fine China silk and found that it served the purpose admirably. I think, however, that this is too slippery, and the raveling is also objectionable. Klewe & Co. likewise experimented with a very sheer muslin, and this is apparently better than the silk, but in my opinion not so good as the gold beaters' skin. It has the advantage, however, that it can be used wet and will thus temporarily adhere to the underside of the gold, and if introduced into a wet cavity is less likely to slide about. There is, therefore, considerable value in this suggestion, especially as it is more readily obtainable than the gold beaters' skin.

The profession, however, is indebted to Dr. Emil Schreier, who has given us heretofore many valuable methods in dentistry, for this idea of using a cradle in connection with the making of matrices.—*Items of Interest.*

A GUIDE TO PUNCH HOLES IN BACKINGS.

R. L. Hesser, Louisiana, Mo.

To accurately punch holes in backings, take a small piece of paper and slip over pins of facing, trimming to size you wish backing to be. Remove this pattern and place on plate, punching to correspond with holes in paper.

FIRST PERMANENT MOLARS.

E. J. Perry, Chicago.

There are eight teeth in the mouth I guard with jealous care: the first permanent molars and the cuspids. When the pulps of the first permanent molars are exposed and the child is under 12 years, I arrive at the question whether to treat them as temporary teeth and extract. I frequently remove one, but never yet consented to extract the other three.—*Dental Review.*

UTILIZE YOUR WORN MANDRELS.

J. E. Cummins, Chicago.

When a mandrel has been used for some time and will no longer hold a disc firmly, instead of discarding it as so many of us do, place a carborundum stone on it and in time we will have a good assortment of stones ready for instant use, and it will save both time and money.—*Dental Review.*

TO REMOVE COATING FROM INSTRUMENTS AFTER BOILING.

J. Q. Byram, Indianapolis, Ind.

The coating which sometimes forms on instruments when boiling may be removed with the following solution:

Prepared chalk	2 oz.
Add ammonia	2 oz.
Alcohol	2 oz.
Water	4 oz.

Rub the instruments with a cloth saturated with the solution, then wipe them with a dry cloth. *Dental Review.*

TREATMENT OF HEMORRHAGE FOLLOWING EXTRACTION OF TEETH.

Sinclair Tousey.

The treatment I advise in such cases has been cleansing the mouth and the socket, and then packing the socket with cotton moistened with Canada balsam. The little pledget of cotton moistened with Canada balsam is fixed there; it does not require any prolonged pressure. It stops the hemorrhage as if a cork were put into a bottle.—*Dental Cosmos.*

SOLDERING OF ALUMINUM.

Herr Wagner of Berlin recommends the following for soldering aluminum and its alloys: He uses a flux formed of 80 parts stearic acid, 10 parts zinc chlorid, 10 parts tin chlorid. Any ordinary soft solder can be employed, but the best is that composed of 80 parts tin and 20 parts zinc. After the dentures to be soldered have been cleansed and passed through the flux, the soldering is done in the usual way.—*Quarterly Circular.*

ROSIN SOAP FOR ENGINE CORD.

Dr. W. W. Belcher says the grip of the engine cord or belt is greatly improved by holding against it while running at high speed a bar of soap containing rosin. To make sure of the rosin buy cheap laundry soap.—*Dental office and Laboratory.*

MAT OF GOLD AT CERVIX.

Dr. Green also said that he had found that a mat of gold at the cervical margins, especially in bicuspids and molars, made not only an excellent foundation for the first layers of the filling, but that it also held the matrix from the margins to that degree that he had an abundance of material for contouring and fine-finishing of the filling. The mat should consist of several layers and extend far enough into the proximal space to fold a little gumwards.—*Dental Office and Laboratory.*

ANTI-FLUX.

The speaker said that he had found it extremely difficult, following the prescribed methods of applying anti-flux, to keep borax from binding backings to porcelain faces. He now swaged the backings, which he always made of two thicknesses of plate, to the porcelains, removed them, painted the to-be-applied surfaces with a thin mixture of chalk and water, replaced the backings and soldered, with the result that there was no adhesion of gold to the porcelain, therefore no fracture of the facing.—*Dental Office and Laboratory.*

COLD SOLDERING.

Dr. Beebee says that fresh amalgam can be made to stick to an old amalgam filling by merely coating the freshly-exposed surface of the latter with chlorhydric acid.

Dr. Sibley added that the same object could be attained (according to the late Dr. Palmer, he thought) by treating the freshly-exposed surface with silver nitrate.—*Dental Office and Laboratory.*

A POLISHING MATERIAL.

J. K. Willis.

To polish gold crowns, etc., I run my felt wheel over a cake of "lava soap." You will need very little pumice, as I think the base of it is pumice or volcanic dust. It's par-excellence for above use.—*Kansas City Dental Journal.*

TREATMENT OF ODONTALGIA WITH CHLORAL HYDRATE.

Dr. Rabbagliette, Paris.

The author reports on the successful treatment of odontalgia by means of chloral hydrate. He employs a solution of 15 parts of chloral hydrate in 100 of glycerin. A pellet of cotton is saturated with the solution and is carefully introduced into the painful cavity. The pain ceases at once.—*Le Monde Dentaire.*

A SYRINGE AND INSTRUCTIONS.

J. P. Root.

No pyorrhea patient, or one with a number of crowns or extensive bridge work ever leaves my office without instructions to purchase a water syringe and a bottle of glyco-thymolin or similar solution, and use the same daily, washing out all pockets, or inaccessible places on crowns or bridges.—*Kansas City Dental Journal.*

CRACKS IN THE ENAMEL.

C. E. Brown.

After inserting, as we thought, a perfect gold filling, a suspicious-looking crack may suddenly appear in the enamel. This is due to the expansion of the gold in response to the heat engendered in polishing the filling; in other words, the expanding plug of gold has burst the unyielding walls of the cavity, and so surely as the gold will contract again on cooling, so surely must it leave a space between itself and the walls of the cavity.—*Record.*

PROXIMAL CAVITIES.

F. B. Noyes, Chicago.

When, in excavating a compound cavity in a tooth, you find a spot upon the next tooth, opposite the cavity, if the patient is young and the caries active, that should be cut out at once and the cavity filled. On the other hand, if the patient is comparatively old and one in whose mouth the progress of caries is stopping, I believe you are not justified in cutting it out. There is a difference in the conditions which must be taken into consideration.—*Dental Review.*

SILEX IN THE MUFFLE.

Coarse silex sprinkled over the floor of the muffle will prevent adhesion of trays, whether of clay or platinum. The advice of muffle-makers is to remove the tray while the muffle is at white heat; this to avoid bringing more or less of the luting with it and at the same time disturbing the wire that the luting is designed to protect. No attempt should be made at any time to remove the silex; most of it becomes a fixture and serves a good purpose while the muffle holds out.—*Dental Office and Laboratory.*

HEAT AS A FACTOR AND AID IN TREATMENT.

Oliver Martin, Ottawa, Canada.

The pain caused by cementing gold crowns may be relieved by the application of dry heat. An excavator with a wooden handle attached to the cutting end makes a good instrument for this purpose. Heat it red hot with a blow pipe and hold the heated end firmly against the occlusal surface of the crown. Remove as soon as the patient begins to feel pain from the heat and a second application is rarely necessary. In teeth containing root-fillings and giving trouble, the above instrument may be used to apply heat to aid the absorption of a medicine, in the following manner: Remove the filling from the crown, expose the floor of the pulp chamber, and after heating the instrument apply to the tooth, holding it well into the cavity. When the heat causes pain apply a pellet of cotton saturated with a volatile, astringent, antiseptic mixture, immediately sealing the cavity with temporary stopping, and repeat if necessary. While this will not cure bad cases, good results have been obtained where it was not possible to remove filling from the roots. The mixture I use is a saturated solution of tannin in alcohol, to which is added an equal quantity of creosote. The principle is that an excessively dry tooth absorbs readily.—*Dental Review.*

RENEWING ZINC.

W. S. Easton.

When zinc used for dies gets thick and does not pour well, melt to dull red heat and add a tablespoonful of strong hydrochloric acid while stirring.—*Items of Interest.*

FIXED SPLINT FOR RETAINING LOOSENED TEETH.

Dr. E. A. Vaughan, Denver, Colo.

Many appliances have been devised for the retention of loosened incisor teeth. The one which I describe has been used by me in nearly 50 cases, and has given my patients comfort and unqualified satisfaction. The same principle has also been applied in a number of cases as an attachment for small bridges, in places where bands and crowns would have been unsightly and uncomfortable, with equal success.

The requisites for the work are a set of Bryant's bridge repair instruments, consisting of screw dies, nut driver, cone-shaped burs for the direct hand-piece, conical gold nuts, iridio-platinum wire, 23-gauge, 31-gauge pure gold plate, and straight drills a little larger than the iridio-platinum wire.

The first step is to ligate the loose teeth, holding them as firmly as possible, and in their natural position.

With any sharp instrument drill holes, just above the pulp chamber, through the loosened and adjoining firm teeth on either side. Usually this includes the four incisors and the two cuspids. These holes must be parallel with each other, or there will be great difficulty in inserting the finished piece. With the cone bur countersink these holes on the labial side to nearly their full depth.

Into the center of a square piece of pure gold plate, a little larger than the tooth, solder a piece of the wire. Put in position on the back of the tooth, with the wire passing through the hole, and lightly burnish to the surface. Remove and trim exactly to the shape of the tooth. Cut threads on the wire, return to position, screw the nut down firmly and burnish the gold thoroughly to place. Repeat this process on each tooth until all are backed and the backings held firmly by the nuts.

Cut away the front of a partial impression tray, and with plaster take impression of the lingual surfaces of the teeth with backings in place. Unscrew the nuts, remove backings and place them in impression. Run model with investing material. I use Sump Separate and solder the assembled parts together.

In inserting the piece, apply the rubber dam from second bicuspid to second bicuspid. Cement each tooth separately, beginning with the firm teeth, springing the appliance back and working the cement down between the backing and the tooth, and also into the drilled holes. Screw the conical nut down tightly into the soft cement, dress down flush with the tooth surface and polish.

Appliances of this kind which have been in place for three years are doing good work, show no signs of deterioration, and I find the gums even when receded nearly to the apices of the roots firm and healthy, and in most cases pyorrhoea has completely disappeared.—*Dominicn Dental Journal.*

GOLD VS. PLATINUM SOLDER.

Hart J. Goslee, Chicago, Ill.

The assemblage of the various parts of a porcelain bridge with *pure gold* as a solder, which was the former and is the common practice, has proven to be entirely inadequate to these combined requirements, when any of the higher fusing "bodies" are used. This is due to the fact that its absorption by the platinum at its melting point, or its volatilization at a higher temperature, or both, to which gold is susceptible in the furnace, absolutely precludes the making of strong joints, or of any reinforcement, and for this reason does not prevent a change of form as a result of the shrinkage.

Such a possibility may be entirely overcome, however, and adequate strength insured by employing 25 per cent. platinum solder throughout the construction of the entire substructure, and including the attachment of the facings. As this alloy is ordinarily not disturbed in the fusing of the "body," a secure, strongly reinforced and reliable assemblage may thereby be effected, for which reason its use is universally recommended.—*Items of Interest.*

IMMEDIATE ROOT-FILLING.

George W. Whitfield, Evanston, Ill.

A number of years ago I was a great advocate of immediate root-filling and did a great deal of work in that direction. Years afterward, in taking off crowns, or where I wished to change the work, I found that where I had employed the method of immediate root-filling, the fillings were foul, if I drilled into them, because I did not treat the tubuli, but simply disinfected and filled the canals and pulp chamber.—*Dental Review.*

ATTACHING VULCANITE TO METAL PLATES.

C. N. Thompson, Chicago.

I have found that pink rubber will become attached to a metal base more securely than will either red or black rubber. I have, since discovering this fact, used it altogether, and it separates but seldom, especially when studs or loops are used.—*Dental Review.*

TO PREPARE THE FLOOR OF THE CAP FOR A PORCELAIN CROWN.

L. A. Arnold, Chicago.

Puncture the floor of the cap from the root side with a pointed three-cornered instrument. A puncture thus made turns up a burr on the porcelain side, which becomes firmly imbedded in the body of the piece, and is fully as retentive as a headed pin in the facing. —*Dental Review.*

PROTECTION FOR FACINGS.

A. E. Matteson, Chicago.

To prevent "etching" of facings when using 20 per cent. platinum solder, paint the surface with a creamy solution of carbonate of magnesium before investing.—*Dental Review.*

HOW TO EXTRACT TEETH PAINLESSLY.

F. H. Hood, Adrian, Mich.

In all cases where a local anaesthetic is indicated, my method of procedure is first to have a small and very sharp hypodermic needle. Insert under the mucous membrane about one-quarter inch from the cervix of the tooth, and inject enough of the anaesthetic to raise a little blister about the size of a small pea, remove the needle and work the blister toward the tooth with finger; this will anaesthetize the tissues around tooth sufficiently so that all following injections will be painless. Enough anaesthetic should then be injected to blanch the gums, after which lance the gums entirely away, which admits of a better grip on the tooth and prevents any injury to the gums. Take plenty of time and do the work thoroughly, and you may be assured of another patient won.

METHODS AND MEANS.

H. E. Davis, St. Joseph, Ill.

The best liquid flux that I have ever used, which I compound myself and find it ever ready and faithful, is:

℞ Boracic acid.
Borax aa ....℥ ss.
Ammonia muriate ....grs. XII.
Pot. carb. ....grs. V.
Aqua dest. q. s..................℥ IV.

It will keep indefinitely and can be used on any metal for hard soldering. It should not be used, however, in connection with porcelain.

I have frequently found, by having some Dorrance alloy and pure copper handy, I have passed through the crisis of being without solder at a time it was most needed, and if you care to be saving you can manufacture your own solder cheaper than it can be purchased at the dental depot. The silver required in solder should be in every man's pocket, a ten-cent piece being sufficient, and as for gold, use clean scrap gold or get a $5 gold coin which contains from 125 to 127 grains.

Dorrance alloy consists of pure silver, one part; pure zinc, two parts; pure copper, three parts.

In making the alloy melt the silver and copper together, and when in molten state push the zinc into it quickly, a small quantity at a time, and between times cover with borax.

I do all my wax work on a piece of plate glass, size 10x17 inches, which I find to be an excellent assistant in many ways, one of which is, it helps to keep the surroundings clean, and to clean the glass simply heat it or scrape it.

For heating rubber for packing a case, I use a common soap stone with a handle, such as can be found at any hardware store, commonly called a foot-warmer, which can be cut to size you wish. They will hold heat much longer than is needed and can easily be cleaned with a piece of sandpaper.

Place a small quantity of sodium bicarbonate in your vulcanizer before using, and you will be surprised how clean you can keep your flasks. They are readily and easily cleaned after such use, quite a difference from those found in most dental offices.

A pair of flask tongs will greatly aid in keeping the hands clean; at the same time one can handle the hot flasks to a better advantage.

Tr. Lavender Comp., U. S. P., costs 60 cents per pound and may be diluted to make a gallon or more. A few drops of the diluted solution in your cuspidor will have pleasant effect on your patients.

A good, cheap disinfectant for your instruments or to whatever use you wish to apply it, is found in Lysol, which costs 70 cents per pound. It is a pure cresol product containing the highest percentage of cresylic acid in a soluble and free state. It is a permanent preparation, non-toxic, makes a clear solution in water, is superior to carbolic acid and creolin as a bactericide and is less poisonous than either. A 2 per cent. solution is equal to a 5 per cent. solution of carbolic acid crystals. Lysol is suitable for general disinfection as well as for medicinal uses. For treatment of wounds a 1 to 2 per cent. solution, for internal washing, ½ per cent. solutions are recommended.

For a convenient, pleasant and cheap mouth wash, add one of Dr. Seiler's compressed antiseptic tablets to a glass of water, which soon dissolves.

In prosthetic work, when your patient has a tender palate and is bothered with retching, to stay such trouble while taking an impression, paint on palate a 20 per cent. solution of bromide of potassium with a camel's hair brush, or gargle 5 to 15 grs., or both, In extreme cases give 10 grs. at night, repeat after breakfast and again, one-half hour before impression is taken; give 10 to 15 grs. It greatly diminishes the sensibility of a tender palate.

The following is my solution of the painless extraction of teeth:

℞ Cocaine hyd..................grs. X.
Carbolic acid (cryst).
Gum Camphor.
Chloral hydrate aa...........grs. III.
Aqua dest. q. s..................℥ IV.

Subscription—Rub camphor and chloral together until liquefied; add acid, cocaine and, lastly, water, and filter. Signature—For painless extraction. I have had it compounded a great many times at 25 cents for IV ℥. Compare the price with your $1.00 an ounce solution and compare it in any other way, for it will bear comparison. I compound my own solution and thus vouch for its accuracy. It takes effect immediately and I have my first case to hear from where sloughing followed its administration.

In making examinations I always allow my patients to have the hand mirror. Let them see for themselves all the conditions as found in the mouth. With the help of my mouth mirror I show them just the conditions and often find them greatly surprised. If you do this they will never say you made cavities in their teeth to fill.

Cover your bracket table with Red Cross aseptic paper covers, which are sterilized. They are not only neat and clean, but make a favorable impression on your patient. Both sides may be used, which makes the cost insignificant.

After removal of the rubber cloth, have ready a glass of warm water with which to rinse the mouth.

I would like to urge the extravagance of clean linen. You can not use too much. I have been in offices and seen the same towel used on several patients. Again, I have seen the private towel of the operator used until a dish rag would look well by the side of it.

You will hear of many new drugs and appliances. If you have spare time look into these things. Try the drugs and think some of these little points out for yourself.

I use the chart or card system of keeping accounts, which is superior to that of a ledger. The cards are alphabetically arranged and divided into three divisions. The first are "unfinished," which contain uncompleted work and credit for any money paid before the operations are completed. The second are "finished," which contain all accounts when operations are completed and unpaid, and the third division, labeled "completed," contains closed accounts when operations are completed and paid.

You no doubt have patients call with the statement: "Doctor, the filling you put in has come out." The patient is only half convinced when you say the filling in question was not inserted by you. If you have a record, you can turn to your index file and instantly take out the card, explain the diagram showing old fillings and the ones you inserted, just what you did, what method and means you employed, fees, etc. That patient will feel secure in the belief that what you say is so. This system of keeping records is business-like, and not only this, but it protects you from unscrupulous persons. The advantages of this system are many: First, I can find instantly any account or record, which can not be done if two or more ledgers have been used. Second, each filling is diagramed and is a protection to the dentist in two ways. It enables him to distinguish his own work and it prevents him from having to replace another's work. I think the principal advantage is that if the records are well kept they must be posted after each operation.

Regarding collections, I have had so little experience I have little to say. I make no bad accounts and have nothing to collect. —*Dental Review.*

TO REMOVE RUST FROM INSTRUMENTS.

Pharmaceutische Centralblatt prints an effective process for removing rust from surgical instruments. The instruments are placed over night in a saturated solution of stannous chlorid, which causes the spots to disappear by reduction. The articles are then rinsed in water, laid in a hot solution of soda soap, and dried. It is well to rub them with absolute alcohol and prepared chalk. Another convenient method for removing rust is to lay the instruments in kerosene. Paraffin oil is the best preservative against rust, and the most convenient way of applying it without getting an unnecessarily thick coating is as follows: One part of the oil is dissolved in 200 parts of benzine, and the objects, after being thoroughly dried and warm, are plunged into the solution. Instruments with joints, as scissors or needle-holders, are washed in the fluid, so as to cause it to penetrate into all crevices, and the benzine is then allowed to evaporate in a dry room.—*Med. Standard.*

GRINDING AND BACKING FACINGS.

Dr. Bush Jones, Dallas, Tex.

In nearly every bridge I see, involving the bicuspids, I find the facings are ground flat, cutting the entire porcelain cusp off, giving, in my opinion, a very unnatural appearance and exposing an undue amount of gold.

I grind and back my bicuspid exactly as for a cuspid, flowing over the backing 20-karat solder, letting the backing extend over the incisal edge sufficiently to insure its not being broken by mastication.

Having placed it in position, I select and swage a cap, using 24-karat gold plate, 36 gauge; this cap I adjust on my bridge, letting the incisal edge of the facing extend into the outer cusp of my cap. I then burnish these as closely as I can, and tack them together with wax, and in some cases I remove this facing with the cap in position and fill cap with 18-karat solder, soldering it also to the facing, but usually I burnish the cap to the facing, and unite them when I solder the parts of the bridge together. In this way I am sure to get a much prettier piece of work, and I am confident that it is equally as strong.—*Texas Dental Journal.*

TO SET AN INLAY.

George T. Banzet, Chicago.

An hydraulic cement should be used, as it conduces much to the comfort of both patient and operator, the saliva being permitted to reach the case within two or three minutes, thus obviating the necessity of covering with varnish, etc. The excess cement should be permitted to remain until quite hard, when it can be removed, and the operation finished.—*Dental Review.*

STERILIZATION OF INSTRUMENTS.

E. M. Kapitan, Manitowac, Wis.

As to the sterilization of instruments, forceps, knives, clamps, etc., I use a sterilizer made of copper. It is practical and inexpensive. All instruments which have been used are taken to the laboratory. Those smeared with blood and pus are thoroughly scrubbed with soap and a brush and are then placed in the sterilizer, which contains about a quart of water and a little carbonate of soda, to prevent the instruments from rusting. Then they are boiled for 20 minutes. This process insures perfect sterilization. Engine burrs and broaches are cleaned with a rapidly revolving wire brush and then placed in pure carbolic acid, there to remain until needed. The mouth-mirror is placed in pure alcohol, there to remain until needed. It can then be washed in water and dried with a napkin. —*Dental Review.*

SOCIETY

OHIO STATE BOARD OF DENTAL EXAMINERS.

The regular semi-annual meeting of the Board of Dental Examiners of the State of Ohio will be held in Columbus commencing November 27, 1906.

Only graduates are eligible to examination.

Application, accompanied by fee ($20.00) should be filed with the secretary by November 17th. For further information address,

H. C. BROWN, Secretary.
185 East State St., Columbus, Ohio.

IOWA STATE BOARD OF DENTAL EXAMINERS.

The Iowa State Board of Dental Examiners will hold its next meeting at Iowa City, beginning at 9 a. m., Tuesday, December 4, 1906.

Written examination in all the regular college branches, also practical work in operative dentistry. Engines will be furnished, but instruments and materials must be furnished by the applicant.

Applications must be in hands of secretary at least five days prior to above date. For further information and application blanks address,

E. D. BROWER, Secretary.
Le Mars, Iowa.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Michigan Board of Examiners in Dentistry for the examination of applicants, will be held at Detroit College of Medicine, Detroit, October 24-27.

ALBERT L. LE GRO,
Secretary.

GREATEST OF DENTAL CONVENTIONS.

Arrangements are being made for holding the world's greatest dental convention at the Jamestown exposition, Norfolk, Virginia, next year. Not only will the various state dental conventions be held here, but some of the European countries will be represented at this national dental congress. Among the celebrities to be in attendance is Prof. W. D. Miller, the greatest dental scientist in Europe, if not the greatest in the world, who will deliver an address before the congress. Dr. Burton Lee Thorpe, of St. Louis, is chairman of the Jamestown dental convention. The other officers and committee are Dr. R. H. Walker, of Norfolk, Va.; Dr. H. Wood Campbell, of Suffolk, Va.; Dr. Thos. P. Hinman, of Atlanta, Ga.; Dr. F. W. Stiff, of Richmond, Va.

Among the organizations to participate in this mammoth convention are the National Dental Association, the Southern Branch of the National Dental Association, the Virginia State Dental Association, the Missouri State Dental Association, the Alabama Dental Association, the Tennessee Dental Association, and other state dental associations.

The Jamestown dental convention will be held in the Hall of Congress or Auditorium at the Jamestown exposition, in 1907, and a series of clinics conducted by world-famed experts at the same time will be given. Preparations will be made to royally entertain the hundreds of dentists who are coming to this convention, both at Norfolk, where the exposition is to be held, and at the other points of historic interest in this locality.

NEW JERSEY STATE EXAMINING BOARD.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual meeting to examine candidates in the state house, Trenton, N. J., beginning Monday, December 10, and continuing through the 11th, 12th, and 13th. Sessions begin promptly at 9 a. m.

Practical and theoretical work completed at this session.

For information apply to the secretary, Charles A. Meeker, D. D. S., 29 Fulton street, Newark, N. J.

All applications must be in the hands of the secretary 10 days prior to the meeting.

CHARLES A. MEEKER, D. D. S.,
Secretary.

ST. LOUIS DENTAL SOCIETY CELEBRATES WITH A GOLDEN JUBILEE.

The St. Louis Dental Society, the oldest continuous dental organization in the world, will celebrate its golden anniversary with a banquet and entertainment sometime in November, when the fiftieth year of its existence will be completed. Eminent men in the profession outside of the city and state will participate.

More detailed announcement will be given later.

J. B. NEWBY,
Chairman Committee on Arrangements.

W. F. Lawrenz, Secretary.

ANNOUNCEMENT.

The members and friends of the G. V. Black Dental Club of St. Paul [Inc.] will hold their annual midwinter clinic in February, 1907.

Last year we held the largest, best and most enthusiastic meeting ever held in the northwest, between 400 and 500 practitioners being in attendance. This year we wish to have an attendance of 1,000.

The program is now being arranged by the clinic committee. The operative clinic will be on its usual high order. There will be a number of progressive clinics on both days of the meeting. Several of the best known men in the dental profession will read essays.

The table clinics will be the most interesting and instructive which we are able to obtain. The program and dates on which the meeting will be held will shortly be published.

As this is the only midwinter clinic held in this section of the country, I take greatest pleasure in extending a most cordial invitation to the members of the dental profession in the United States and Canada to attend our clinic.

Special rates on all railroads.

For any further information apply to R. B. Wilson, secretary, 107 East Sixth street, St. Paul, Minnesota.

AFTERMATH

Dr. Wesley Sloan, a well-known dentist of Peoria, Ill., died Sept. 3 from the effects of typhoid fever, aged 53 years.

Will Specialize.—Dr. B. E. Lischer, St. Louis, Mo., announces that hereafter he will limit his practice to orthodontia.

Dr. Joseph Heiss, a retired dentist of Philadelphia, died from general debility, September 9, 1906, at the age of 84 years.

Dr. Harry A. Gernerd died in Bath, Pa., August 27th, of diabetes, aged 65 years. For 40 years he had dental offices in Bethlehem and Bath.

Died in Dental Chair.—Albert Kaason, of Glenwood, Wis., died in a dental chair at Glenwood, August 28. The young man had gone to the dentist to have two teeth extracted and passed away under the influence of chloroform.

Appointed Member of Examining Board.—Dr. R. Hirons Clifton, of Smyrna, Delaware, has been appointed by Governor Lea to be a member of the State Board of Dental Examiners, to succeed Dr. Middleton, whose term has expired.

Jealous.—Edna—Is little brother ever going to have teeth?

Mother—Surely.

Edna—Then I s'pose that's the reason that dentist's wife next door pays him so much attention.

Dies In Dental Chair.—Mrs. Albert Apple, wife of a well-known farmer living northeast of Nevada, Iowa, while lying in a dental chair under the influence of an anesthetic, suddenly collapsed and died almost instantly. She was having ten teeth extracted.

Dentist Attacked by Highwaymen.—Dr. Herb Patterson, a dentist of Makanda, Ill., was attacked on his way home by two men, who succeeded in getting but $17 from him. He saved his watch by throwing it into some weeds and finding it next morning.

Adjudged Insane.—Dr. A. R. Koch, the New Ulm dentist, who was charged with killing Dentist Gebhard a year ago, has been adjudged insane and is at present an inmate of the asylum at St. Peter. For awhile he has been doing dental work at Minneapolis.

Dr. Stedman Commits Suicide.—Dr. E. Stedman, a well-known dentist of East St. Louis, committed suicide, August 2, by saturating a handkerchief with chloroform and also swallowing a portion of the drug. Financial troubles seem to have prompted the rash act.

Sold His Practice.—Dr. L. E. Heasley, who has been practicing dentistry in Standish, Mich., for the past five years, has sold his office and practice to a Saginaw dentist, who will continue the same. Dr. Heasley will go to Chicago to enter the "Squab" business.

Home From Europe.—Dr. G. A. Kennedy, associated with Dr. George Martin, Berlin, Germany, spent August and September at his home in Ohio. Dr. Gillette Hayden, associated with Dr. McBride, Dresden, Germany, spent August at her old home in Columbus, Ohio.

American Representatives.—At the recent meeting of the American Society of Europe, held in Berlin, Germany, in August, Dr. T. W. Brophy, Dr. G. V. Black, Dr. Robt. Good, of Chicago, and Dr. C. A. Hawley, Columbus, O., were present and took part in the proceedings.

Dental Journal Discontinued, But Editor Gets a New Job.—Dr. Joe Root, Kansas City, Mo., writes that his journal, The Kansas City Dental Journal, has been discontinued, for the reason that he has accepted a position on The Western Dental Journal as "Assistant Hired Man."

Arrested for Practicing Dentistry Without a License.—F. G. Kennedy, in the employ of a Sioux Falls, S. D., Dental establishment, was arrested on the charge of practicing dentistry without a license, as required by the state law. He entered a plea of guilty and was fined $25.

Poor Teeth Bar From Navy.—After being hoaxed by an employment agency and walking 20 miles, to Mitchell, Ill., to enlist in the United States marine corps, Edward Schneider, 6 feet tall, weighing 180 pounds, and perfect physically otherwise, was rejected at the recruiting station because of the lack of three teeth.

Dr. White Dies on 87th Birthday Celebration.—Surrounded by his relatives, who were celebrating his 87th birthday, Dr. E. Y. White, of Cambridgeport, Mass., died after a brief illness. He was widely known in professional circles, and in Cambridge and Boston enjoyed the acquaintance of a large circle of friends.

Dr. Charles R. Taylor Dead.—Dr. Charles R. Taylor, a member of the Illinois State Board of Dental Examiners, appointed by Governor Deneen, is dead at Streator, Ill. Dr. Taylor was one of the most prominent dentists in Illinois. He had traveled extensively and was the author of several books treating on dentistry.

New Member of Delaware Board of Examiners.—Governor Lea, of Delaware, on August 31, appointed Dr. R. H. Clifton, of Smyrna to be a member of the Board of Dental Examiners of the State of Delaware. The appointment is for a term of four years and the appointee will succeed Dr. T. H. Gilpin, of Middletown, Democrat.

South Dakota Board Affairs.—The governor of South Dakota is being censured for appointing a member of the examining board contrary to the recommendation of the State Dental Association. It is understood that the law requires the governor to act upon the recommendation of the board, but that he has not done so. What the outcome will be is problematical.

School of Anesthesia and Extraction of Teeth.—The only school of anesthesia and extraction existing has been started in Chicago for thorough instruction in this branch of dentistry. Dr. L. W. Nevius is dean; Dr. L. O. Green, president; Dr. O. W. Green, consulting physician, and Dr. F. K. Ream, secretary. There are said to be good opportunities in the cities for specialists in this branch.

Dental Office Burglar Arrested.—George E. Warrens, who was arrested within two hours after the office of Dr. George Ramsey, Milwaukee, Wis., had been robbed of false teeth and gold plate, has a record in New Orleans, according to the police. When taken into court, August 28, the prisoner pleaded guilty to the charge of burglary and was held for trial in the municipal court.

Married.—Dr. W. R. Davis, Coshocton, Ohio, was married August 9th to Miss Ione M. Adams. Dr. C. D. Owens, Benton, Mich., was married in September to Miss Bessie Ravell, of Grand Rapids. Dr. C. A. Quackenbush, Grand Rapids, Mich., was married, August 29, to Miss Nellie Sargent, of Fonda, Iowa. Dr. L. A. King, Williamsport, Ind., was married, September 9, to Miss Clara Donovan.

A Dentist's Life Worth Forty Thousand Dollars.—The supreme court of the State of New York has affirmed a judgment of $40,000 for the death of a dentist, holding that this is not exorbitant in view of the following facts: The dentist was 37 years of age; his income from his practice was from $17,000 to $20,000 per year, and he left three children, the eldest of whom was 11 years of age.

Injured by Vulcanizer Explosion.—By the explosion of a vulcanizer, Dr. E. D. Geiger, a dentist of Chenoa, Illinois, was severely injured while working in his laboratory, August 17. The explosion occurred just as he was looking at the thermometer on the instrument. A piece of the metal struck him full in the face. His nose was badly mashed and lacerated and he was otherwise severely injured.

Ohio State Examining Board Affairs.—The Ohio board have prosecuted eight illegal practitioners in the state, so far this year. On August 30, Luther P. Gross, Tiffin, O., was arrested for illegal practice of dentistry. He waived examination in Mayor Leister's court, and was bound over to the grand jury of Seneca county, August 30. C. H. Jordon, of Oak Harbor, was arrested on the same charge and waived examination, and was bound over to the grand jury of Ottawa county. Howard E. De Wees, of Malvern, O., was recently bound over to the grand jury in Carroll county. The Ohio board is determined to keep illegal practitioners out of the state. Of the many prosecutions made, the Ohio board has never lost but one suit.

College Will Not Re-open.—The Des Moines College of Dental Surgery, established about seven years ago, and which has been located in Des Moines, Iowa, will not re-open for business this fall. A disagreement between the management and some of the creditors of the school is responsible. The management has not been able to secure a complete faculty for the coming year. Dr. W. A. Harrod is the dean of the college and Dr. S. U. Marietta is secretary. The college has been affiliated with Drake university, but was not under its management. In the last seven years several large classes have been graduated from the college and many of the students have done creditable work. The expense of maintenance, however, has been such that the school has bcome involved in debt. The equipment used will go to the Marshall Dental company, which holds a mortgage thereon.—Des Moines Register.

Dentistry in Brazil.—Consul-General G. E. Anderson, of Rio de Janeiro, is receiving many American inquiries concerning openings in Brazil for the practice of dentistry, to which he replies: "In Rio de Janeiro there are quite a large number of Brazilian dentists, some of whom are prospering, and others are not. There are also a number of American dentists who have plenty of work at high prices, and while the cost of living and their expenses are very high, they have large incomes. The advertised prices are 30 to 50 milreis per hour ($10 to $16 gold), the actual charges being a little below these rates. These successful dentists, however, are men of experience and attainments and would do well anywhere. To secure a license one must pass not only a rigid technical examination, but must read and write Portuguese fluently. The Brazilians who can supply first-class practice are limited in number and the trade is well controlled, so that it would be difficult for new dentists to secure an opening. American dental supplies are popular and well represented here."

Maine Examining Board Report.—The 15th annual report of the Maine Examining Board stated that, in the years since the board was created, there have been examined 2,180 applicants, of which 1,918 received certificates. The members of the board feel that the time has come when the practice of private pupilage in operative dentistry should no longer be permitted. They say that a student cannot be constantly under the eye of his preceptor, and a student or assistant operating under the teeth or mouth of a patient is "practicing dentistry" in the eyes of the law. The members further contend that the safety of the patient is not enhanced by the fact that he receives his compensation from some other person and not from the patient himself. The board is not in any sense a prosecuting body, and some hesitation has been felt about taking the responsibility of disturbing the old order of things, although the courts in other states have many times decided that such practice is illegal, and the members of the board believe that public opinion at the time fully sustained their interpretation.

Robberies.—Dr. C. C. Thomas, Aurora, Ill., robbed of $125 worth of property. Dr. Peeler, Hazleton, Pa., $100 loss. Dr. Russell, Hazleton, Pa., $25 loss. Dr. O. M. Barker, Seneca, Ill., $25 loss. Dr. Crissman, Davenport, Iowa, September 3, loss several hundred dollars. Robbers entered the office of Dr. Smith, dentist, at Springfield, Ohio, taking about $40 worth of gold. The dental offices of Burchfield & Ray, St. Joseph, Mich., were robbed of $100 in gold, August 15. Every dental office in Wapakoneta, Ohio, was entered by thieves and over $200 worth of gold stolen. The office of Robert Wallis, of Champaign, Ill., was robbed of about $25 worth of gold, July 28. The office of Dr. A. E. Mann, dentist of Findlay, was robbed of $5 worth of gold foil. The dental offices of Dr. E. B. Brokaw and Dr. G. B. Lowery, of Findlay, were entered by robbers, the first doctor being robbed of about $32 worth of dental material, the second of about $12 worth of gold. The dental office of J. O. Scott, Holland, Mich., was visited by thieves, September 7th, and gold plate to the amount of $15 and $13.50 in money were stolen. Dr. James S. Scott, Kent, Ohio, was the victim of thieves, September 4, losing gold and other material to the amount of $50. Dr. W. L. Gares, Columbus, Ohio, September 4, had scrap gold and several gold bridges stolen from his office. Dr. J. J. Madden, Buffalo, N. Y., September 8, suffered the loss of artificial teeth and materials by thieves.

Jamestown Dental Congress.—The Virginia Dental Association, at Old Point, heeded the call of Jamestown and will hold its 1907 annual gathering in the big auditorium on the exposition grounds. Yesterday Dr. R. L. Walker, of Norfolk, extended the invitation to the dental doctors to come to Norfolk next year, and reports from across the Roads is that the invitation was received with enthusiasm. A plan is now on foot to invite not only all the state dental associations of America, but the foreign associations, to Norfolk, next year. It is proposed that all shall meet at the same time, and upon convening shall resolve themselves into one organization, to be called "The Jamestown Dental Association."

This much has been decided, and a committee on organization has been appointed. It consists of Dr. H. W. Campbell, of Suffolk, chairman; Dr. F. W. Stiff, of Richmond, secretary, and Dr. R. H. Walker, of Norfolk, treasurer. Dr. T. P. Hinman, of Atlanta, Ga., has been appointed a member of the committee from the southern branch of the National Dental Association. Dr. Burton Lee Thorpe, of St. Louis, is the member from the National Dental Association of the United States, and is the president.

Dr. C. A. Mercer, of Richmond, is the chairman of a committee which will look after the large number of visitors that will attend the congress.

It is estimated that 4,000 dentists will take part in the convention, which will be the greatest gathering of the practitioners of that profession ever held in the world.

Recent Patents of Interest to Dentists.—

826818—Dental tool, James H. Abbott, Philadelphia, Pa.

826922—Tongue support, Elmer E. Davis, Los Angeles, Cal.

826629—Cord suspension electric dental engine, John V. Trenaman, New York, N. Y.

826977—Dental swaging device, George J. Weber, Liberty Center, Ohio.

827507—Dental instrument, Lyter H. Crawford, Philadelphia, Pa.

827508—Dental swaging instrument, Lyter H. Crawford, Dallas, Texas.

827236—Combined rubber dam clamp and holder, Harold J. Hansen, La Crosse, Wis.

827308—Toothbrush holder and sterilizer, David M. Hitch, Lansdowne, Pa.

827693—Hypodermic syringe, Frederick W. Korb, Cleveland, Ohio.

827121—Tooth-cleaning device, Patrick F. Roach, Westfield, Mass.

827965—Toothbrush, Gregor Engel, Charlottenburg, Germany.

828109—Apparatus for stamping and shaping dental metal crowns, Adolf Grunstein, Budapest, Austria-Hungary.

828146—Forceps, James Somers, San Juan, Cal.

827824—Dental articulator, Frederick W. Stephan, Chicago, Ill.

Copies of the above patents may be obtained for ten cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

Bad Teeth of German School Children. The result of an examination of the teeth of the pupils of a school at Hochheide, in Germany, reported by Consul-General Richard Guenther, of Frankfort, is very suggestive. Of the 1,020 children examined, 482 were boys and 538 girls. The boys had 12,826 defective teeth and only 2,116 sound ones. Only 19 of the boys had perfectly sound sets of teeth; 397 sets were unfit for chewing food; with 192 boys, disturbances in their general condition were observed, due to decayed teeth. Of the teeth of the girls, 15,747 were found defective and only 931 sound Only 16 girls had perfect sets of teeth; 205 girls were suffering in their general condition in consequence of decayed teeth.

The total result showed that 90 per cent. of all the teeth examined were defective; only 35 out of 1,020 children had sound sets of teeth. In 396 children a poor bodily constitution was due to poor teeth. The result shows that caries, or decay of the teeth, has extremely noxious consequences.

National Association of Dental Faculties.—Officers were elected for ensuing year as follows:

President, Dr. J. I. Hart, New York; vice-president, Dr. Frank Holland, Atlanta; secretary, Dr. George E. Hunt, Indianapolis; treasurer, Dr. H. R. Jewett, Atlanta.

Northern Iowa Dental Society.—Officers elected are:

President, Dr. J. D. Welsh, New Hampton; vice-president, Dr. C. W. Booth, Cedar Rapids; secretary, Dr. H. P. White, Sioux City; treasurer, Dr. F. D. Miner, Oelwein.

The Northern Iowa Dental Society will hold their next annual convention in Sioux City.

Fox River Valley (Wis.) Dental Society.—Officers elected are:

President, Dr. L. H. Moore, Appleton; vice-president, Dr. J. J. Geary, Oshkosh; secretary, Dr. Mary G. Hastings, Oshkosh (re-elected); treasurer, Dr. George Massart, Green Bay.

Appleton was selected for the next meeting place.

REGULAR CONTRIBUTIONS

AN ANCHORED DENTURE

BY J. B. BEAUMAN, D. D. S., COLUMBUS, OHIO.

Every dentist who has practiced prosthetic dentistry for any length of time knows full well the difficulty of constructing a lower plate, either full or partial, which will be satisfactory to his patients. Especially is this true of partial plates. It has been a perplexing problem with me to adjust a lower plate, to have it work well. Where the molars are gone I have tried many plans and methods, with partial success only.

I have had in mind for several years past a different mode of procedure, but never tried it until four years ago, when a case presented which was favorable for a trial. The result has been most eminently satisfactory.

It is most desirable that the plate remain solid and firm during mastication, and especially in biting with the anterior teeth. To obtain this result has been my purpose, and the experiments which I have made have been so successful that I am desirous of giving the results to the profession. The plan that I have adopted for the lower denture is equally as applicable to the upper.

Where the posterior teeth are gone and only a few of the anterior remaining, and in comparatively good condition, select four for anchorages and remove all the others. First in importance are the two second bicuspids and the cuspids. Extract all others and retain these, and an ideal case is presented. When these four cannot be had, use of those that remain such as nearest approach the ideal.

It is desirable that those teeth which are used as anchorages should stand, as nearly as possible, in a semi-circle. When thus standing, and interlocked, one cannot move without all moving.

When the undesirable teeth have been extracted and the gums have sufficiently healed, place the patient in the chair and cut off those that remain down to the gum line on the labial surface, but on the lingual surface leave a little above the gum. The removal of these crowns should be accomplished painlessly, as it is best to inflict as little pain as possible.

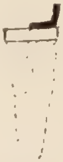


Fig. 1.

There are a number of ways by which the teeth may be cut off without pain; as, by the use of ethyl chloride; injection of cocaine; pressure anæsthesia, etc. When the nerve is anæsthetized, take a thin copper disk and cut a groove in the labial and lingual surfaces, and with the excising forceps remove the crown. If the grooves be cut with a carborundum disk the forceps *pinch* the crown off instead of removing it by wedge force. When the crown is excised remove the pulp, and with a smooth broach and a bit of cotton saturated with clove oil, close the root canal and seal it with temporary stopping, and allow to stand for a day or two before further procedure. The next step is to fill the root canal perma-

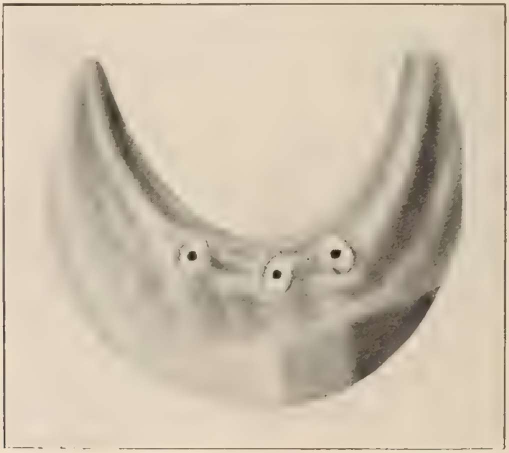


Fig. 2.

nently before enlarging the canal for the pin. The pins should not be made too large, as the roots of the lower teeth are small.

Band and cap the roots and drill holes in the caps for the pins. Should the pins in the cuspids interfere with the proper placing of the teeth they should be bent in such a manner that, while remaining parallel to the other pins, they will permit of space sufficient for the teeth. When so bent the pins will have somewhat the shape indicated Fig. 1.

Fig. 2 represents a case with the teeth cut off ready for capping.

Fig. 3 represents the same, banded, with a bar interlocking the caps.

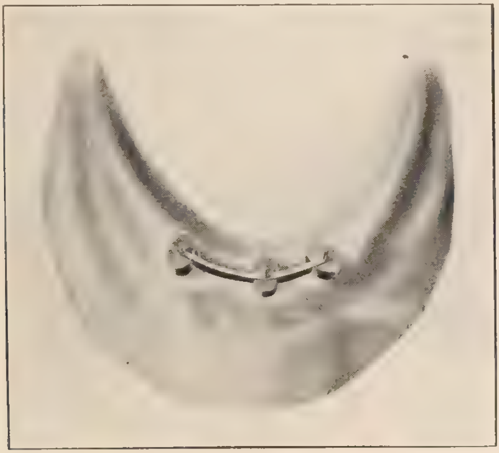


Fig. 3.

Place the caps and pins in position on the roots and take an impression in plaster; when sufficiently hardened pour up cast, separate, and fit the bar and solder all together.

Next, place in position in the mouth and see that all is well; then get an impression of the entire jaw, allowing the plaster to get quite hard, when remove, and all will come out together. Pour up, separate and place in the articulator. Set the teeth up in the usual manner and flask, and before packing the rubber, cover the cast and the entire framework with No. 40 tinfoil, using white shellac varnish to hold the foil on the cast. Burnish the foil to a smooth surface; then vulcanize as usual. After removing from the vulcanizer and cleaning, trim edges of plate; then with a strong pair of pliers take hold of the pin, using the edge of the plate as a fulcrum, and lift the framework of pins and caps out of the rubber. It will stick quite tightly; be careful not to mar or bend it out of shape. The pins should not be more than three-sixteenths of an inch above the caps, or it will be very difficult to remove the framework. Finish the plate, and when finished set the frame in place in the mouth; place plate in position in the mouth, and on the frame, to see that all is right. The next and last step is to cement the frame permanently in place. After the cement has hardened put the teeth in place and instruct the patient not to try to remove them until the next day. The patient should be instructed to brush and rub the gums to keep them hardened and in a prophylactic condition.

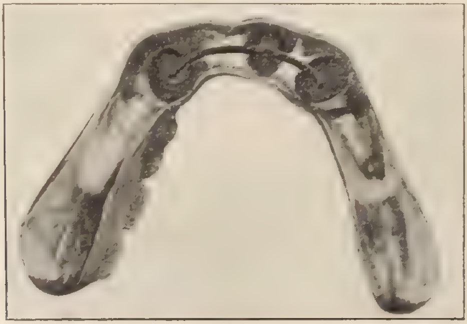


Fig. 4.

The bands and bars should have a smooth and even surface to allow of ready removal from the plate.

Do not scrape the rubber away to allow the plate to slip on and off more readily.

I prefer to make the pins and bars of platinum-iridium wire, as it is not so easily bent out of shape.

The bars should be flattened and set up edge-wise, leaning lingually. The pins should also lean slightly lingually, but parallel with each other.

Continuous gum is much to be preferred as a denture, and everyone should be prepared to make it. It is simple of construction, and when well made, far more beautiful than any other.

Fig. 4 represents a full lower continuous gum denture that was made for Figs. 2 and 3, showing the under-surface of the plate.

Fig. 5 represents the anterior surface of the same.

To swage a platinum plate, place the caps and pins in position in the mouth and get a good impression. On removal all will come out together. Secure a cast, mould in sand and pour up a zinc die. Cut off the pins of the zinc, leaving a slight projection of each to indicate the position of the holes in the plate. After partially swaging, punch holes where indicated, and complete the swaging. Try the plate on the plaster cast to see that it will go down over the frame.

The plate should now be tried in the mouth to see that it does not impinge too heavily in any place. When found to be all right it should be rimmed with suitable wire. I rim my plates with iridium-platinum, as it strengthens the plate greatly. It is much harder to put such stiff wire on, but it is worth the effort.

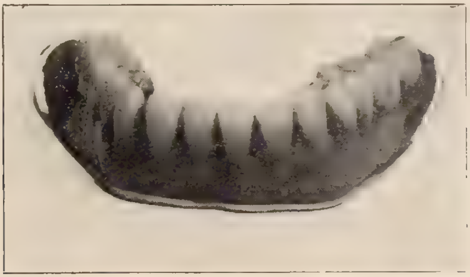


Fig 5.

When the plate is rimmed, mallet it to the zinc die with the horn mallet.

Now get an impression over pins and frame when in the mouth. Build up the edges of the impression with fresh plaster, dry out and pour a die of Mellotte's metal. Make tubes of thin platinum to go over the pins, put them on the pins and force the plate down over them, and swage in the shot swage. Next solder the tubes to the plate, being very careful to have it free from the fusible metal.

Close the end of each tube by cutting it half off a little above the pin, bend the end down over the tube, solder, and file smooth. Now finish swaging.

When complete, remove the fusible metal by melting, and thoroughly cleanse the plate by placing it in nitric acid. Next place the framework in the mouth and try the plate to see that it fits properly. Get an articulation on the plate and assemble the teeth in the usual manner. Invest, back and solder, and it is ready for the porcelain. And now, the dentist who cannot complete the baking of a continuous gum plate in two bakings is a good ways behind the times.

To give full and complete instruction in the making of a continuous gum denture would require a full paper of itself.

Fig. 6 very imperfectly represents a case which was a puzzler. The bicuspids leaned lingually much more than is indicated in the cut. I had talked the anchored plate to this lady, and had committed myself. Then the question was, how I was to get the framework on those crooked teeth after it was all soldered together; but I did not have a particle of trouble. Finally, when all was complete, I placed the plate in its place, and she immediately remarked: "Why, how good they feel! It is wonderful!" This lady shook hands with me three or four times before she left the office.

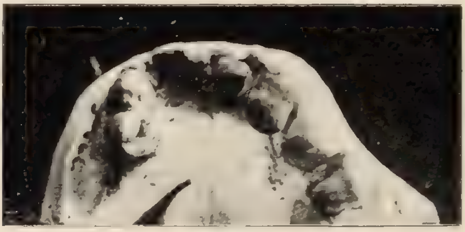


Fig. 6.

The lady for whom the plate was made, which was illustrated in this article, remarked to me a few days ago, that she would not take two hundred dollars for her plate.

Another, a gentleman, said he would give a thousand dollars rather than have his teeth fixed in any other way.

Others say they can eat anything on their plates.

These are but a few of the expressions in favor of the anchored denture.

SOME REASONS FOR SUCCESS OR FAILURE IN THE PRACTICE OF HUMANITARIAN DENTISTRY.*

BY W. G. EBERSOLE, M. D., D. D. S., CLEVELAND, OHIO.

Why most men fail where others succeed is a question upon which volumes have been written in attempted explanation.

Why almost all men fail while others succeed in the practice of humanitarian dentistry is a question which, while confined to one particular field of work, is one that would require many papers at the hands of the men most familiar with the dental profession individually and as a whole, before it could be answered.

It is therefore an utter impossibility to attempt in one paper to even point out all the reasons for success or failure in the practice of humanitarian dentistry, let alone make a full explanation of these reasons.

It is the purpose of this paper, then, to simply touch upon the more apparent reasons for success or failure and present them in a manner which will lead to a fuller and better understanding of this work.

Let us understand at the very start that the writer of this paper has been, and is, one of the most rabid advocates of this so-called humanitarian dentistry.

It has been the hobby of his professional life, the riding of which has resulted in both good and harm.

In this, however, he has not been alone. Others have been valiantly fighting for the same cause, and the combined efforts have resulted in much good and some harm.

POSSIBLE TO ELIMINATE 95% OF PAIN.

The good that has been accomplished is, that by the combined efforts of these men in the inventive and experimental field, results have been attained which make it possible to eliminate 95 per cent. of the pain formerly thought necessary to insure perfect dental operations.

---

*Written for The Dentists' Magazine, but read before the Lake Erie Dental Society, Cambridge Springs, Pa., 1906, with the express understanding that the paper still remain the property of The Dentists' Magazine.

[The Dental Summary has been privileged to publish with the other Lake Erie Society papers, The Dentists' Magazine kindly furnishing advanced proof.—Ed.].

Let us understand this statement fully. It is not meant that 95 per cent. of all dental operations may be made free from pain, but that when all pain from whatever source or cause is considered, 95 per cent. of it can be eliminated by the employment of methods and means at our command.

It is here that harm has been done in the past. The making of such statements as the above is one great reason why so many men have tried these methods and failed.

Strong statements have been made in the past and are being made today, and made in all truth and candor. Men have been so filled with the possibility of this work, and have obtained such results that they have been loud, not only in proclaiming the results of their efforts, but have insisted that all could obtain the same results if they would but try.

Many have written and spoken thus, forgetting that possibility to some is an impossibility to others.

Now, gentlemen, I do not expect you to believe the statement that 95 per cent. of all pain can be eliminated in the production of first-class dental operations. In fact, I now know that unless you have used, and used for a long time, the methods mentioned, it is an utter impossibility for you to believe such statements.

PREJUDICE AND FAILURE.

In the past, advocates of pain-preventing methods in dentistry have made statements, believing that because of their truth the profession could and would accept them as such.

Methods have been advocated and results have been proclaimed which, to the inexperienced, were impossible. Doubt has been created as to the truthfulness of the writers and speakers upon these subjects, resulting in almost the entire profession arraying itself against those advocating this class of work.

Good men in the profession have taken a stand against each other in this matter. Charges and counter-charges have been made. Criticism and ridicule has been hurled back and forth, resulting in good to none and injury to all.

It was only through a recent review of the articles written on this subject that I awakened to the fact that the greater number of those prepared in each camp have been written with a view of shelling the position of the other.

This awakening brought me to the realization that the main reason why most men failed in their attempts at using humanitarian or pain-preventing methods is because they are prejudiced before hand, having little faith in the statement of those advocating these methods.

After this awakening and a careful study of this question, *pro* and *con,* I am compelled to say that I am in hearty sympathy with the disbelievers. They have been justified in a great measure in the position they have assumed.

Their justification, however, has not been in the correctness of the position taken by them, but rather in the failure of those who have written to carefully point out that a great amount of effort that must be put forth before the results desired can be produced.

THE MEN WHO SUCCEED.

The men who are succeeding in this line of work are either those who have spent a number of years in carefully developing these methods, or those who have been able to grasp the results obtained by others, either by direct contact or through a correct interpretation of their writings.

In either case these men, when they have written or spoken upon these subjects, have forgotten to explain that to succeed requires time, patience and experience.

The inexperienced one who has heard or read these papers has been led to believe that all that was necessary was to acquire the instruments, start to use them, and results must follow.

These instruments could not produce results without a most thorough understanding and execution of the technique envolved in their use.

Lacking this, and forgetting that time and experience are necessary to success in all things, they have failed in their first attempts, become disgusted, and condemn not only the instruments and methods, but their advocates as well. And who can justly blame them?

I have done so in the past, but I do so no longer. Henceforth my efforts shall be directed to try and lead men, instead of driving them, to understand and use pain-preventing methods.

HUMANITARIAN DENTISTRY.

Let us here drop a word as to the meaning and use of the term humanitarian dentistry. The use of this term has led to a misunderstanding and some criticism. The writer gave birth to this term, and it has been adopted pretty generally by the advocates of this line of practice.

I admit that the name is not all that is pleasing or desirable. While this is true, it is certainly less objectionable than that misnomer of painless dentistry used formerly by both the legitimate practitioner and the quack, but today is being used solely by the charlatan, "whose practice is neither painless nor yet dentistry."

Two kinds of dentistry were being practiced by the members of the true profession: first, dentistry which considered first the thoroughness of the operation at hand, and second, the comfort and power of endurance of the patient; the other, dentistry which gave the patient first thought and consideration, the thoroughness of the operation second thought.

The former is dentistry which has been practiced for years and is being practiced today by most men.

The latter is of more recent origin and is being practiced bv comparatively few men today. To it has been given the name of humanitarian dentistry.

Humanitarian dentistry, while giving first thought and consideration to the comfort of the patient during the operation, "means dentistry as perfect and as thorough as the most exacting may demand, and yet so free from pain and suffering that the most timid patients will eagerly submit to such treatment."

WHAT THE BEGINNER MUST LEARN.

The first thing that a beginner in the practice of humanitarian dentistry must learn is that if he is to succeed, he must commence at the foot of the ladder and climb up round by round.

The only advantage he has over those who are now meeting with success is that the ladder has been built by these men, and all he has to do is to climb and receive the reward at the top.

Another thing that the beginner in the practice of this kind of dentistry must understand is that it cannot be learned in a few minutes, hours or days. It requires much time and experience. The men who are its strongest advocates and who are the most successful in practicing it are men who have devoted years to perfecting themselves in this direction.

REAL AND IMAGINARY PAIN.

In practicing humanitarian dentistry, the operator must deal with both real and imaginary pain.

He must be as successful in handling one as the other, else he is not a success in this line of work.

Therefore it is essential that we, in our discussion of this matter, take up both kinds of pain.

The first thing that presents itself to the dentist is the vivid imagination of the patients. This, coupled with the fear and dread most people have of dentists, and dental operations, places many of the patients in a condition bordering on irresponsibility. This condition must be reckoned with before attempting anything else.

To gain confidence and dispel fear must be the first thought of the dentist who desires to practice humanitarian dentistry.

Many men fail here. Most men make light of the patient's fear and lack of confidence, and the majority of them have no patience with patients who imagine that they are being hurt.

HOW TO BE SUCCESSFUL.

Success comes only when these patients are handled in a way which brings them to a position where they are capable of sound, rational judgment.

This is done in many ways, depending upon the individual case.

First let your patient know that you are fully aware of their condition and position in the matter, but impress upon them that they have your full sympathy, and that you are just as anxious not to hurt them as they are not to be hurt.

Tell them that in order not to hurt them you are going to make use of methods and means which make it possible to do their work free from pain, but that in doing this you must have their hearty support. Caution them to notify you the moment they feel the slightest pain whatever.

Make no promise to a patient which you do not expect to keep to the letter.

Cultivate a delicate touch. A touch can be cultivated which is both delicate and firm—a touch so light that it fails to irritate, and yet so full of strength and character that it inspires confidence.

In preliminary examinations, if a cavity is found, that is enough. The knowledge that this cavity exists should suffice. Defer a complete examination as to the extent of that cavity until you have made an appointment to care for that particular case, and have plenty of time to investigate and treat existing conditions.

If a patient is suffering, or has been suffering, do not go probing until you have obtained the history of the case. Gain from information furnished and ideas of what to expect, whether sensitive dentine, pulpitis, or pericementitis. Then proceed in the most cautious manner to confirm this history, and finding a condition, treat it, using every precaution not to hurt.

If the rubber is to be applied, and there is the least likelihood of causing the slightest pain in so doing, have your assistant bathe the gums for a few moments with a solution of cocaine in adnephrin and water. If there is still danger of considerable difficulty in placing the rubber cloth, have the time lengthened, and the cocaine solution used until the gums show a blanching.

Then proceed, with the utmost care, not to cause pain in adjusting the rubber. This is of the greatest importance in many cases. Many times have I seen patients in such a nervous state by the time the dam was in place that they were in no condition to be operated upon.

Having the rubber in place, dry away moisture, being careful not to cause pain in so doing.

Cautiously open up the cavity and remove all debris, using sharp chisels and excavators, resorting to the use of the engine and bur as little as possible, until you have ascertained the kind, nature and sensitiveness of the cavity.

The dental engine is one of the greatest bugbears to our patients, and should be used only when and where it is absolutely needed, and always when and where it can be used without causing pain.

TIME SHOULD NOT BE CONSIDERED.

In *learning* to practice humanitarian methods, time must not be considered. Results are what we are after. When we become skilled in producing results, then it is permissible to consider the question of time and the saving of same.

Having the cavity before us, and making a diagnosis as to whether it is sensitive or not, we are ready for the next step.

It is the sensitive cavity only which concerns us at this point.

If a sensitive cavity, we must judge whether it will yield to topical remedies, or whether cataphoresis, high pressure, or general anæsthesia will be necessary to successfully prepare the same painlessly.

TOPICAL APPLICATIONS.

Time and space will not permit a thorough discussion of the topical application of obtundents, other methods commanding our attention. A general rule, and a statement relating to topical obtundents, and we pass it. Our rule is, all topical remedies should be applied warm to sensitive cavities.

Alcohol should be warmed before applying, and after this application every effort should be devoted to prevent evaporation taking place rapidly enough to cause pain.

The statement I wish to make is, that the man who uses alcohol, chloroform, ethyl chloride, or ether in a sensitive cavity, to produce a condition which will permit cutting without causing pain, lacks all conception of what is required of him.

He is a failure because he lacks judgment. (I am speaking now from the standpoint of humanitarian dentistry). He is absolutely worthless as a worker in that field, unless he can be taught the folly of trying to kill one pain by first causing a greater one.

Humanitarian dentistry demands that all pain be eliminated, and a man is a success or failure just in proportion as he is able to do this. Producing pain at one time to avert it at another is not permissible.

If the cavity before us is one requiring more than topical remedies, we must next decide which of the three remaining methods is best suited to the case.

HIGH PRESSURE AS AN OBTUNDENT.

Next to topical remedies, I will consider the method which my neighbor, Dr. C. G. Myers, presented to the profession.

It is not for me to enter into the discussion as to who was the first to use the principle involved. It is sufficient for me to say that Dr. Myers was the first to invent and present to the profession an instrument that made it possible to use this method with any degree of success.

It was his invention and energy which brought to the attention of the profession this method, in a manner which produced results. When we consider how few men succeed where the most improved instruments for this purpose are placed in their hands, it is a little less than idiotic for any one to make the claim that they presented an instrument prior to this which was a perfect success.

As stated, Dr. Myers was the first to make an instrument which made this method worth considering as a pain-preventing factor in dentistry, and, so far as I know and have been able to learn, he was the first to present the method to our profession.

The first instruments were faulty, but he and others have made improvements until we now have a number of very good syringes for this purpose.

These instruments PROPERLY used make it possible to excavate the most sensitive teeth absolutely without pain.

So much has been written telling how to succeed, and yet so many failed, that I think it best to point out some of the reasons why we fail in the use of these instruments.

CAUSE OF FAILURE FROM THIS METHOD.

Failure in the use of this method is not the fault of the instrument unless the operator has abused it by careless manipulation.

Careless manipulation means the bruising or bending of the needle point. The slightest injury to these points means inability to get proper adaptation and thus obtain sufficient pressure.

A faulty or damaged point may cause many failures.

The drilling of the initial pit requires the utmost care, or hereto we reproduce a condition which courts failure.

The instructions sent out by the various manufacturers must be followed to the very letter before success can be expected.

THE WRITER'S METHOD OF PROCEDURE.

The writer uses a No. ½ round bur, drilling with a light touch until the slightest sensation is felt, then take a No. 1 bur and give just the slightest countersink to the cavity, and then apply your high pressure.

In drilling the initial pit, stop and apply high pressure the moment the slightest sensation is experienced. After a few seconds remove the syringe and deepen the pit until sensation is felt, when a re-application of pressure anæsthesia is made for a short time, and again drill till sensation is produced or until the pulp chamber is approached very closely, if it is desired to remove the pulp. In this case high pressure should be continued for some time prior to entering the chamber, if the pulp is to be removed without causing pain.

If, on the other hand, it is a sensitive cavity that is to be prepared, then drill only deep enough into the tooth to get a good adjustment of the point, and at the same time reduce the resistance in the tooth substance till the solution may be forced deep enough to permit the preparing of the cavity without causing pain.

No rule can be laid down giving either the depth of the pit or the length of time high pressure must be continued to procure results.

The age of the patient, the size, condition and position of the cavity aids the experienced operator in judging this to a certain extent, but it is only the actual test which enables one to tell when sufficient anæsthesia has been produced.

The test the writer uses is to drill into the cavity a pit, or if a large cavity, to cut out and prepare that part of the cavity which is most removed from the point in which the injection is made. When that can be done, then it is safe to destroy your initial pit and proceed with the cavity preparation.

If this method of procedure be followed, there need be no fear of injuring the pulp.

There is no more excuse for injuring or endangering the life of the pulp in the use of this method than there is for the physician to injure or endanger the life of his patient in the administration of any of the many poisons that are used thousands of times daily in the treatment of the various diseases.

It is simply a question of judgment and dosage. The average dose is administered, and continue increasing or diminishing the dose until the desired result is obtained.

No two patients respond exactly alike, and in this, as in dentistry, each case is a case unto itself, and as such must be handled independently of all others.

At the moment when that part of the cavity farthest from the point of injection can be prepared painlessly, high pressure should cease if the best results are to be obtained.

Fear need not be created if the anæsthetic effect is extended considerably beyond this point.

The pulp may be anæsthetized with entire safety if necessary, but it is only in the most extreme cases that this is required. It is only when an over-dosage or an improper solution is used that much danger exists.

A MISTAKE.

Many use the same strength solution for removing pulp and for preparing sensitive cavities. This is a grave mistake. Solutions for the removal of a pulp should contain a large percentage of adnephrin or adrenlin, while those for obtunding sensitive dentin should contain but a small percentage, or, in some cases, none at all.

Another grave mistake is either to think or teach that this method requires but little time. I have obtained the most satisfactory results in five minutes, and again in the same mouth on a corresponding tooth, with all conditions seeming the same, I have spent an hour to an hour and a half, and in some cases two hours and a half before getting the result desired.

Such cases are rare, but they exist, and when we strike them, even the oldest and most experienced of us are both puzzled and disgusted. What then must be the feeling of the beginner when he meets cases of this kind?

Much injustice has been done both to humanitarian dentistry and to high-pressure anæsthesia by enthusiasts claiming this method suitable for all cases. It is but one means to an end. With it alone humanitarian dentistry must needs be a failure—not because every tooth in the head cannot be reached and thoroughly anæsthetized, but because in our intense desire to prevent pain, we lose sight at the time of other things of equal importance.

There are many cases where I consider it decidedly inhuman to drill an extra cavity which cannot be included in the original one, when other methods at command grant equal immunity from pain without loss of extra tooth substance.

I refer to cataphoresis and the minor and major general anæsthetic.

CATAPHORESIS.

Cataphoresis, yes; I will dig up that supposed relic of the past. Bear with me while I do justice to a power which has fallen almost from sight because we, as a profession, fail to understand it, and would not give to it the necessary time to become familiar with the wonderful power for good which it holds and offers to the profession for the seeking thereof.

Of the methods for obtunding dentin it offers most. There is no necessity for making extra cavities in the teeth when cataphoresis is used. Your dosage can be gauged accurately.

There is no danger of carrying poisonous ptomains into the pulp. No danger of mechanical injury to the pulp, and it can be applied to one tooth while another is being filled.

DRAWBACKS TO ITS GENERAL USE.

There have been four great drawbacks to its general use.

First, the difficulty of procuring a suitable apparatus. Many makes of instruments were palmed off in the profession, and most of them were about as well adapted to the needs of the present as would be a stage coach in competing with our express trains, or the ox cart as compared to our touring autos as a means of travel.

Some of them possessed merit, but the only one that was constructed along the right principle was one built according to the ideas of Dr. Weston A. Price, of Cleveland. These instruments, when properly constructed, were all that could be asked. But unfortunately the building of them was placed in the hands of parties who carelessly let a number of imperfect instruments slip through, and great harm was done thereby.

The second drawback has been the expense in procuring a perfect apparatus.

Many looked upon the expenditure of a hundred or a hundred and fifty dollars in this direction as all unwarranted. The truth is, my dear reader, that if a thoroughly reliable instrument could be had for twice the amount, and then used, it would be the best paying investment that could be placed in a dental office.

Third, the amount of time required to properly insulate the cavity and make the application.

Much of this loss of time is unnecessary. At first it takes time, and plenty of it; but it is a thing that must be learned just as we learn to work gold or porcelain, and I would say to you that if learned and well learned, it will pay, and pay better than will either of the others alone.

There is nothing that the public will pay for so readily as the time spent in preventing pain.

A study of the case on hand permits the saving of much time by working on two parts of the mouth at the same time.

For instance, if there are a number of teeth that require filling, open up a cavity in one, insulate it by applying a second piece of rubber over the cavity and covering any fillings with chlora-percha, and then start cataphoresis on that case, and while it is working open up other cavities on the other side of the mouth.

Then, when filling the one, cataphoresis can be working on one of the others, which can be prepared for filling and left until the next sitting, if necessary. Then, while filling that one another can be obtunded.

Another way to save time is to start the instrument working, and turn it over to your assistant while you work in the laboratory, or on another patient.

The time consumed in this work is time well and profitably spent.

Fourth, the difficulty experienced by most men in learning to handle this method. This is the greatest reason for failure in the use of this one method.

Not one man in a thousand has been able to grasp all the points necessary to complete success in using cataphoresis, and of those who have done so but few are capable of teaching it to others.

I have heard possibly the best posted and one of the most successful users of this method make statements which were, to say the least, confusing, and have seen clinics at his hands which were positively misleading, because things of vital importance were passed over as of little value, and too simple to be neglected even by the most inexperienced.

Every man that attempts to use this method should become thoroughly familiar with its workings.

No man who attempts to practice humanitarian dentistry can afford to be without a cataphoric outfit, nor should he be without a high pressure syringe.

Men fail with these because they will not devote sufficient time to study that they may become expert in their use.

The busy man will not take time because he does not need to do so, while his patients will submit to the old way.

It is in the young man that the possibility of humanitarian dentistry lies.

THE GENERAL ANESTHETIC.

Of general anæsthesia, major and minor, I have little to say, because, to my way of thinking, their place lies only in the surgical field, that is in extracting, opening up abscesses either through tooth or gums, and kindred operations.

Many are using them in excavating sensitive dentin, and doing so with gratifying results, but it is very doubtful if such means will ever become very popular with the masses.

Of the general anæsthetics, nitrous oxide is the one par excellence for the dentist's use.

Many substitutes have been offered, and with each there has been announcements of great discoveries, but in time all have been compelled to admit that nitrous oxide gas stands in a class by itself, as far as safety is concerned. As to the duration of the surgical stage, all depends upon how it is administered, and for what purpose. A number of men are using it with marked success in the preparation of sensitive cavities, placing the patient when partially under the influence of the same.

In all operations where freedom from pain cannot be obtained by the use of the means already cited, the writer maintains that the best interests of humanity demand the use of general anæsthetics, even to the use of chloroform, if needs be.

Much remains that might be said under the title of this paper, but we must end here, as the paper is already of great length. Other questions will be taken up in another paper at a later date.

* * *

SPLINTS FOR THE ANTERIOR INFERIOR TEETH.*

BY R. I. BLAKEMAN, D. D. S., INDIANAPOLIS, INDIANA.

It is often very perplexing to decide upon a plan for securing surgical rest for loose lower incisors, as also may be the case with other loose teeth. It is my purpose, however, to deal only with lower incisors, in this paper.

There are several conditions to be considered before we choose the kind of splint to be used. In some mouths the lower incisors are but little exposed to view, because of a beard or facial peculiarities. In such cases the simplest method may be to make a band for each tooth, adjust it on the tooth, and remove in a plaster impression, from which obtain a model, with bands in place, and solder together and reinforce as may seem necessary. In some cases it may be necessary to band *every other* tooth, only, and solder a lug or point to hold the adjoining teeth. In making these bands, less gold will be exposed, if the bands are made wide on the lingual side and very narrow on the labial. I will suggest here the necessity of removing any corners or points on the teeth that may interfere with adjusting the appliance when finished.

A failure, which proved an interesting experience for me, was a case where the teeth were rather short, the ends being worn off and presenting broad surfaces, labio-lingually. Slots were cut across each incisor, and two-thirds or more across the cuspids. The floors of these slots, and part way up the walls, were filled with gold, then a piece of platino-iridium wire was fitted across from cuspid to cuspid, and the fillings finished over it. This made an acceptable-appearing piece of work and held about three years. Then I had occasion to regret it.

A few years ago, a young woman (very good-looking), whose lower incisors I had previously treated for pyorrhœa, returned to me with the gums very much receded and two of the teeth so loose that I feared their loss very soon. It was a "condition, and not a theory," and demanded prompt and definite action. The teeth were white, rather long, thin, regular, and much in evidence when talking. To employ bands or other appliances, showing gold, seemed out of the question. As a temporary brace, the teeth were tied together with silk ligature, down close to the gum. Then a model was obtained from a plaster impression. From this a metal die was made. To the lingual surface of each tooth a piece of pure gold was swedged, from the cutting edge to just below the thickest portion of the tooth at its base. Perpendicular holes were drilled in each tooth, one at the base, one and sometimes two, at or near the the top. The gold backings were then placed on the teeth and punctured to conform to the drilled holes. A good method of holding them to their positions is to tie with a silk ligature.

---

*Read before the Indiana State Dental Association, June, 1906.

A platino-iridium wire of suitable gauge, and preferably threaded, is placed in each hole and allowed to extend above the backing, from one-eighth to one-fourth of an inch. Plaster is then flowed over the pins and backing, for the purpose of removing them intact. The portion of the pin extending above the backing should be flattened on one side, or beveled at the end, as a guide in re-adjusting it, in event it pulls or is displaced when removing. The pins are then soldered to the backing, using but little solder. The backing is then replaced on the tooth, and carefully burnished to place. Remove, and invest the backing and reinforce with solder. Now replace them on the teeth, remove in a plaster impression, invest, and solder them together. It is advisable to adjust the rubber dam before cementing the piece in place. I have set several splints, constructed in this manner, and as I have seen them from time to time since, they were apparently holding perfectly.

DISCUSSION.

Dr. Patterson: I have been very much interested in the various methods of holding these lower teeth. I have tried nearly all those that have been placed before the profession. I am sorry I have not with me illustrations of a method I introduced some years ago, and which has been so satisfactory to me that I discarded all other methods. In nearly all instances where we tie ourselves up to one method in dentistry we make a mistake, but for nearly all the cases of that kind I have I follow the plan I adopted some years ago, and which has been so successful and permanent that I am justified in recommending it to any one who has cases of this kind in charge.

In the first place, when the lower teeth that need retention are treated, I ligate them firmly in the position I desire they shall occupy. In cases of pyorrhœa very often the position of the teeth is changed, but they can be ligated and kept in the position you desire. The next step is with the proper drills to make a hole clear through the upper portion of the tooth, within an eighth of an inch, or a little more, from the top of the tooth, which will accommodate 21-gauge gold wire. When we have these cases, we know very well the horn of the pulp has receded, so that I have never found any danger from encroachment on the horn of the pulp. The hole can be drilled right through the tooth without any danger. The next step is to take an impression with red base plate gutta-percha of the lingual aspect of the teeth you desire to hold in place, surrounding this impression, and pour upon it the low fusing metal, which can be done in a very few minutes. In this way you will get a very good model. Swedge upon that a piece of 22-karat gold, place it in the mouth, and indicate with an instrument through the holes where the pins should be. Punch the holes and put your wire in and solder upon the lingual side. Then put it in the mouth and arrange it and burnish gold to fit exact. Use pure gold if you want it. Remove this very carefully without changing its position. Then reinforce with solder the back or lingual part until sufficient strength is gained. Before putting it on finally you will grind or file the plate to the proper shape, and when it is finally completed, place the rubber dam upon the teeth and cement it in place. After it is thoroughly hardened, cut off the pins, and if you desire, you can rivet them with a round, smooth burnisher in the engine, dress off the extra cement, and your operation is completed.

I say, with confidence, there is no other appliance for the retention of the lower front teeth that is so delightful and permanent and that is so readily cleansed. All the space below it can be cleansed perfectly. All the gold that shows is the end of the 21-gauge gold wire, which cannot be seen by one standing two or three feet from the patient. I assure you, the satisfaction I have had with this appliance, compared to any sort of band or other appliance, has been very delightful to me, and to others in our part of the country who have adopted the same process. When that appliance is applicable I use no other. Its permanency has been assured, because I have used this process over 12 years ago, and I have made 40 or 50 of them since. They are all permanent, and they are a delight to me and to the patient because they do not show, perceptibly, any gold.

Dr. Max M. Eble, Louisville, Ky.: Of course every case requires a little difference in the *modus operandi*. As a rule, in these cases, you have long teeth to contend with—the gums have receded and the teeth are exposed. One of my patients was a man of 55, and one of his incisors was so loose he could not bite anything with it at all. He thought it would be well for me to take that tooth out and bridge in some teeth. The tooth was in good condition as far as its vitality was concerned, for it was absolutely alive. The first thing I did was to get those teeth in line. Dr. Patterson spoke of ligating the teeth in position. There is frequently so much movement it is necessary to ligate them. This tooth was exceptionally loose, and three others were slightly loose. By pressing my finger against them, they were brought back exactly in line. On account of the fact that an arch was formed there, it was a very easy matter to take a piece of this quick-setting modeling compound, press it against the teeth in front.

When it was removed I could always have the same condition present when I worked on those teeth.

I have been for the last few years something of an inlay crank. For an æsthetic appearance, you want to avoid the sight of gold. I use the inlay on both of the cuspid teeth. I made two good-sized inlays, which covered almost the entire lingual surface of the teeth. After I had those two inlays in position, I put this piece of modeling compound that I used as a retainer for the teeth in position, and then with mouldine took an impression of the other teeth. I then stamped up an impression that extended from inlay to inlay, or lapped a little. Before I took that impression, I drilled a hole in the lingual surface of each of these lower central incisors. Then, when I took the impression in the mouldine, it left just a little mark. I swedged up my piece of about 32-gauge pure gold; that left a little impression for the hole the pin was to go into to fasten the teeth. I placed that in position on the teeth, took a sharp-pointed instrument, and where there was already a mark I perforated through. I used 19-gauge iridio-platinum wire, then took an impression of it with an inlay in position, and this plate in the back. I removed the inlays and made my investment so I could solder the pins in position. After having soldered the pins in position with a minimum amount of solder I placed my inlays in position, then this little strip of gold in position, and with my piece of modeling compound in front, and a little napkin under the tongue, I fastened this piece to the two inlays with sticky wax. Then I soldered it in position. I got in this way exactly the position of the teeth I wanted. I set them with cement, and there is absolutely no holes visible. The gentleman was so well pleased with the work, he has sent me a number of patients with loose teeth.

I believe, in most instances, it is not necessary to have any gold at all show. The stress these teeth are put to is all back, and it is not necessary usually to have any band at all. I believe, in most cases, with a good, heavy inlay on the posterior of these teeth, there is no use for showing the gold at all.

Dr. C. E. Redmond, Peru, Ind.: I want to compliment Dr. Blakeman on his paper, as I consider it a very good one; also Dr. Patterson and others. I remarked to the gentleman sitting next to me that, the first thing you knew, this gentleman in Chicago who has been advertising so extensively will have you arrested for infringing on his patents. I was in Chicago during the meeting of the Manufacturers' Association, and I thought I would like to meet the man who writes the long articles in the *Chicago Herald* and other Chicago papers. I suppose every dentist here has had long clippings brought to him by patients which showed where this man claimed to put in teeth without plates. I got a letter of introduction to the manager of that firm. I wanted to know if there was anything peculiar about his method of retaining teeth, and almost the first thing he said to me was: "If you will tell one of your patients pyorrhœa cannot be cured, he will seek other advice." He took me into his private office, and into the little rooms where he had dentists working. He had diagrams of this band system, only the gold showed the full length of the tooth. That was their patent. The manager said he had people coming from ocean to ocean. I have since known of patients coming from San Francisco to be treated at that institution. He gave me names of dozens of people, from Lafayette and all over this state, who had been treated there. He said: "We take and clean the teeth just as you do, removing the tartar; then we bind these teeth together so they cannot get away. Anyone can do this work as well as we can, by using the band system; but the patient will not believe it." Their fee is from ten to twenty dollars each for them. It is wonderful the business they do in that line. I told the manager that could be done in Chicago, but it could not be done in a small town. They do not say they will cure these teeth that are loose. They know the patient will lose them sooner or later, but if they only get a few years service out of them, the people are satisfied, and it is surprising how many years they will last.

Dr. Blakeman: I have nothing further to offer. I think Dr. Patterson's method is a good one. As Dr. Eble has said, there are often cases that require individual attention. I am not in favor of entirely discarding the band system, because in some mouths the appliance is not at all visible. Some people's lower teeth are hardly ever brought into view. I had occasion to see a case a few days ago where one or two of the patient's teeth were almost out. Five or six years ago, I had put four bands on the lower incisors. Those bands are not to be seen, yet they are holding the teeth perfectly, and the simplicity with which it is done is sufficient to recommend it.

Another point I want to make is that sometimes it is necessary to brace these teeth pretty well perpendicularly; that is, from the point to the base of the tooth, thereby overcoming any tendency whatever to tip. In that way you get the result by having the appliance extend pretty well up and down the back of the tooth. That does not bring it into view at all, because the bands only need to cover the back of the teeth, and if you have a pin in the tooth towards the bottom of the appliance it holds it securely. I do not agree that it is a temporary and not a secure thing. I saw one of those appliances where one tooth had become entirely detached, and it was still held firmly in place.

LABORATORY LIGHT.

BY DEWEY D. SMITH, D. D. S., SANDUSKY, OHIO.

Some time ago I saw in one of the dental journals, an idea how to make a cheap reflector.

As soon as the opportunity presented itself, I made a reflector and also worked out a scheme which I will give in connection with the first. The borrowed idea regarding the reflector is this: Get a large-sized funnel, remove the part that goes into the jug and cut slits into the part adjoining, thus making it so that the funnel will fit over an electric socket. Then bind a little wire around the slitted part. Thus far the expense is about ten cents. The addition I made was: I took two pieces of tool steel, each ten inches long, and stapled them to the top of my Ransom & Randolph No. 6 Laboratory cabinet (this can run between any two desirable points) at the ends, connecting the two with a piece of picture wire, thus having it over my work bench. From my lamp-socket I have a wire hook so I can slide my lamp along on the wire or remove it to another wire or carry about the laboratory.

MENTAL INFLUENCE IN THE DENTAL OFFICE.*

BY W. H. WHITSLAR, M. D., D. D. S., CLEVELAND, OHIO.

Next to the physician whose errands of mercy and visitations of homes wherein observances of the frailties of human nature provide him with food for thought and worry, the dentist stands in a relation, at least in many instances, almost the same.

Pain, which is the monitor to admonish us of disturbances of the economy, is the dread of humanity. It drives all beings to seek relief. For this reason the dentist is visited or is called sometimes to the bedside of one in extreme agony. Pain frequently causes the mind to be distracted, and self-control is lost wherein the inner feelings are dominated by grief or anger. In the observation of these conditions it is the duty of the dentist to recognize their cause and avert the difficulty if possible by his sympathetic and manly demeanor. This requires experience and also the art of using rightly his knowledge of human nature. In fact, he should rise above the routine of mechanics and cultivate a superior knowledge of the properties of mind and the uses for which it is intended. Under such conditions the personality of the dentist becomes a guiding factor in the evolution of his successful practice. Indeed, the personal equation is a decided element in the production of success. Fortunately, however, the methods and means of operative procedure are improving, and each year finds us better qualified to use what we possess. Therefore, it is reasonable to say that the terrors of a dental office are passing away, dependent upon two conditions, i. e., the improvement in the science of dentistry, and the enlightenment of the people.

---

*Read before the Northern Ohio Dental Association, 1906.

There are events occurring which rob the profession of its dignity, and defeat its objects. Briefly considered, it is harmful to our best efforts to have newspaper articles concerning our professional meetings headed with, "Tooth Carpenters in Session," and similar references, which lowers the tone of the paper itself, at the same time showing its lack of appreciation of a beneficent profession. Another reflection is the obnoxious advertising of charlatans, who resort to hideous pictures of teeth, with false promises of quality of service, and special prices. At the entrances of such offices we observe alluring specimens of workmanship, together with perhaps a bushel of offensive extracted teeth. Worse than this is the street fakir who exhibits his skill extracting teeth before a gaping crowd at a street corner.

He who wears a tooth as a charm on a watch chain, or talks about his skill in public or private places provokes adverse criticism of his profession and prepares patients to consider him lacking in skill.

Well-meaning parents often are in error in telling children of their own suffering in the dentist's chair. This prepares a child to do its worst and makes it a coward at the outset.

The above diversified conditions are but a few examples of the ways and means that prepare the minds of people for an incorrect conception of the scope and benefits of dentistry. It is thus readily conceived how the mental condition of many is at variance with the real conditions ere they enter the dental office. Disseminating knowledge to correct these conditions becomes a part of our duty. To do this we must become broader in general knowledge and useful as citizens, that the dentist and his profession shall receive greater respect and confidence. It is confidence that wins hearts and minds. It is the half-hearted and non-confident persons that tend to lessen the endeavors of one that tries to be helpful to them. Therefore, preparation for the profession, reputation for ability, character, and environment, are the factors that place the dentist in a sphere of his own. In the construction of this world of his own an atmosphere of faith is required. It is the keystone to every mental process in the practice of dentistry. Without faith the sufferer has to be led, and without faith in his ability the dentist fails. Therefore, as said before, he must build upon his ability, character, and usefulness to his fellowman, having his office and equipment bear evidence of professional attainment. Yet, with all these attainments, there are those who lose business through personal uncleanliness, i. e., unclean finger-nails, tobacco breath, drink etc., which make a disgusting spectacle. These mental impressions are carried home and told to friends. Likewise are racy stories or any confidential remark about another dentist distributed. The simplest remarks made in an office are quoted, making it really a study to say those things which will give information in a way that is understood, or to speak words of comfort to those in fear or in actual pain.

Generally, patients come to us having worried about what is to be done, and, generally, too, they leave the office finding that their worriment was not realized. This was accomplished by an inspiring faith.

Bad faith is engendered by poor service, rough handling of instruments in the mouth, making an instrument table of the chest of the patient, tipping the chair too far back, unclean instruments, etc. Viewed from the patient's standpoint there is a multitude of thoughts permeating the mind during a dental operation. Previous experience leads him to enter the chair with an interrogation point as to his chances of escape. Vivid imagination now prevails, and at this point the quiet demeanor of the dentist will quell a fast-beating heart. The whole situation depends upon mental influences. It is a question of faith, and how far this faith will be carried. Observe now that the eyes and ears have given the mind an insight to all external surroundings—and this same mind led the patient to reason that his physical self should receive a dentist's care. Besides this, the law of self-preservation is embodied in this conclusion. This is wisdom doubled, for when persistence of this intelligence ensues it subjects the body to a greater power of resistance to pain. There is a central intelligence that seems to govern the whole situation. It is also impressionable, and the effects are proportionate to the power that stimulates the sub-conscious mind. In other words, there is a power of the mind that controls the sensations, emotions, and conditions of the body.

The mind is considered dual in its nature. That which perceives through the senses and in the mind of ordinary waking consciousness is termed the objective mind. The subjective mind is used when the objective senses are asleep or inhibited. However little the subjective mind may be used it responds to suggestions either from some one else or from the person himself, and since it controls the sensations and conditions of the body, suggestive therapeutics works within this mind irrespective of the objective mind.

It seems to me that the whole trend of suggestive therapeutics is dependant upon faith. Hudson says that, "While the faith that is required to make therapeutic suggestions effective is primarily the faith of the subjective mind, nevertheless suggestions are most potent when they are not antagonized by any resistance whatever, either intellectual or emotional. Hence it is that suggestions which are based upon scientific truth, other things being equal, are necessarily the most potent in their influence and permanent in their effects. As in all the other relations of human life, truth is mightier than error or falsehood, and it is the condition precedent to all permanent good."

From the above we perceive that to accomplish good results we must rely upon scientific truth and that which eliminates all fraud. In the treatment of patients, an appeal to reason rather than credulity enables one to accomplish better results with his operations. The effects have a permanency which would otherwise be transient if fraud or trickery were practiced. In the treatment of children especially it is better to be frank and truthful. Indeed, "suggestion" is one of the most important factors in the education and development of children, because it brings about a requisite mental condition. If we apply "suggestion" in therapeutic uses, then it would be addressed to an intelligence whose faith can be induced and the suggestion carried into effect.

There is a condition in the practice of dentistry that is observed by every dentist, namely, the inability to place himself en-rapport with his patient. Nature seems repellant, temperamental at least, and the mind and entire nervous system is disturbed or out of harmony. There is no "animal magnetism," so called, in evidence. Dentists notice these conditions more than any other class of doctors because of the fact that the hands and fingers are constantly being placed upon the face and head. In the finger tips are located tactile corpuscles which are, next to the tongue, the most sensitive of the body. Through these terminals of the nerve system are received impressions which establishes a chain of communication between the suggestive mind of the two individuals. Hence there is perceived by the dentist an impression or suggestion of disapprobation. It is this that wears upon his nerves and tires him out, even though he combats it with suggestive treatment.

There is a possibility in the dental office of dangerous suggestion being given by allowing observers to an operation. As an example, a lady witnessed the painless removal of a pulp from the tooth of a daughter, which made such an impression upon her that it became an exciting agent in the hallucination of the mind that her own teeth were mistreated. Another example is illustrated by the uninformed who witness the administration of nitrous oxide gas and observe the color changes of the face.

Other examples could be given, but it is desirable to conclude with one other class of mental conditions to be observed in dental practice, and that is the mental phenomena connected with anæsthesia. One of the common conditions met with in giving an anæsthetic is the expression of fear and resistance to the anæsthetic. This is where resistance has not been overcome by either reason or suggestion. On the other hand, it is frequently noticed that in the lighter stages of anæsthesia, both at the beginning and closing of the use of the anæsthetic, that one of the chief traits is increased suggestibility. This is very important since it is desirable to know what element produces reaction to the conversation of attendants, or if any responses reflect the normal habits or idiosyncrasies of the waking condition. Or, do they belong to the experiences of the past? These and many other questions are now occupying the minds of psychologists.

Under anæsthetics, the majority of patients have illusions or hallucinations. A little girl having a tooth extracted supposed she was thrown into the air by a locomotive explosion. Another patient imagined he was trying to swallow the earth. Erotic sensations during anæsthesia are observed. These occur more from ether than any other anæsthetic. Cocaine is reported to have the same effect. Women are more subject to this condition, and it is liable to occur nearest to the periodic congestion. Under these conditions grave charges have been made in court against dentists and sentences to the penitentiary pronounced. No dental practitioner should administer anæsthetics to female patients unless an attendant is present to avoid false accusations and blackmail.

In conclusion it is gratifying to say that the perusal of this subject has been helpful to me because, no doubt, it has the element of auto-suggestion in it; and it leads one to study other natures and apply knowledge in the direction of doing that which will prolong happiness and life.

DISCUSSION.

Dr. W. T. Jackman, Cleveland: At no time in the history of man has metaphysics (now called psychology, a far better and more comprehensive term, from the Greek Psyche, meaning soul and logos, meaning discourse—a discourse on the Soul) claimed as much scientific thought as at the present time. Although this is claimed to be a materialistic age, it is no less an age of mental scientific investigation. Man today is demanding to know the reason for the faith the other fellow thinks ought to be in him. Man's power to reason is finite and dies when the body dies. Truth is eternal and man has but just set sail on this vast ocean of undiscovered truth. How carefully we have been taught about things pertaining to the senses, and, per contra, how little the most of us know about the real inner self—or the power within. The Bible calls this inner self the Soul. "And the Lord God formed man out of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living Soul." Therefore, the body is not the man; man has *not* a soul; but man *is* a soul,—a living soul. "Oh, well," some hearer may say, "when you talk about the soul, the Ego, or the Inner Self, it is such an abstruse, non-get-at-able subject that I don't know how I can learn anything more than I now know." Permit me to assure you that more scientific discoveries have been made in the last two decades pertaining to the objective mind and the subjective mind (or soul) of man than in all the previous history of the race. Indeed, so far as the writer is aware, nothing really scientific was ever written on the subject till Dr. Thomson Jay Hudson's book on the "Law of Psychic Phenomena" was given to the world in 1893. If you are seeking to know more of your real self, you will find this book of transcending interest. Other authors have written well on psychology, but none that the writer has read is so absorbingly interesting or scientifically correct.

"Thoughts are things," and the most potent of all things,—ordinarily supposed to be intangible, but this has not been proven to be scientifically true. Indeed this is now being carefully investigated. The foregoing generalities are given to assist the essayist, if possible, in creating a desire for light on this subject in the minds of any (if such be here) who have given this subject no attention. We congratulate this association on having this subject so well presented, and also thank Dr. Whitslar for the thoughts contained in his paper. Much has been said recently of the physical personality of the dentist, and this is referred to incidentally in the paper, but his mental personality is of far greater import. It is true the physical appearance of the dentist has much to do with his success or failure. The boor will not succeed, though he be clothed with a perfect physique; and, conversely, the superior mind, well trained, will succeed, though housed in a very inferior body. The essayist well says, "The dentist should rise above the routine of mechanics and cultivate a superior knowledge of the properties of mind and the uses for which it is intended." This multum in parvo is the gist or kernel of the whole matter. If the dentist trains himself in the art of cheerfulness, kindness, gentleness and sympathy, functions of the subjective mind, other things being equal, he must succeed. The point relative to the press calling us tooth carpenters, etc., is well made, and, of course, our press committee will take the hint. Any form of advertising is to be deplored, but of all abominable methods that of tooth display in any form and the boast of possessing superior skill are the most disgusting.

"Well-meaning parents are often in error in telling children of their own suffering in the dentist's chair; this prepares a child to do its worst, and makes it a coward at the outset." There is so much truth in this statement that we pause a moment to analyze it.

If people have been hurt in the dental chair how natural to talk about it in the home circle. Children—the little tots two, three, four and five years old—live almost entirely in the subjective world; consequently every sentence that falls from the lips of papa or mamma is a suggestion, be it good or bad, to its inner self, or suggestive mind, that is never forgotten. Manifestly the cure for all this is to not hurt the parent—send him home in such a state of mind that the child may learn, at least, that the dental office is not a place to be dreaded. Until within the last few years it was necessary to hurt people more or less, sometimes a good deal more than less, in thoroughly excavating cavities; but now, thanks to the wonderful advances made in methods of procedure, to hurt a patient any to speak of, except in extreme cases, is to brand oneself as not worthy the name of a dentist.

The Doctor speaks of surrounding oneself with an atmosphere of faith. Surely this is necessary, for faith is the cornerstone of all human endeavor. Faith in oneself and in his fellows, particularly the latter, is absolutely essential to the highest success. "Yet, with all these attainments, there are those who lose business through personal uncleanliness, etc." In this connection the writer would criticise the use of the word "business," believing that patronage is a better term.

The lack of cleanliness must damn any dentist who aspires to a high-class patronage, as the essayist states. The reasons are too obvious to dwell on them.

We should all take to heart and ponder carefully what the Doctor says about suggestion—particularly about being sincere, truthful, and never wilfully deceiving even the youngest patient.

Again, the point the Doctor makes in not being able occasionally to become en rapport with his patient is a good one.

You will all agree, I think, that the shopper is the most unpleasant patient we have to deal with. Pardon me if I tell you how in general I dispose of the "shopper," bargain-hunter. She wants to know what it will cost to put her teeth in proper condition. I tell her I do not know. After explaining why, I say: "If you think I can give you as good, or better, service than any other dentist can give you, and you are willing to pay me what I believe to be a reasonable price for it, I shall be pleased to serve you; otherwise I do not care to do your work. If she responds quickly to this I have won my patient, and the chances are she will prove to be a good patient. If she hums and haws about the matter, I quickly tell her, politely of course, that I prefer some other dentist would do her work.

Inasmuch as the saving of dollars is usually the "shopper's" primary thought, the dentist who will offer to do the work for the least money is the one who gets it to do.

Yes, the writer quite agrees that the dentist, assistant and patient are enough in the operating room. Exceptions might be noted. Surely the place where the proper mental attitude of the dentist can be shown to the best advantage is in the extracting room. The confident, calm, self-possessed air of the extractor is a strong suggestion in itself; this, coupled with a few oral assurances that the patient will not be hurt neither by the anæsthetic nor the forceps, etc., is usually sufficient to allay, practically, all fear. A given anæsthetic affects the mentality of no two persons alike, as far as phenomena are concerned; therefore I do not believe it will ever be possible to demonstrate, scientifically, their mental effect.

In closing, permit me to quote from Wood's "Ideal Suggestion." "We should think as though our thoughts were visible to all around us. Real character is not outward conduct, but *quality of thinking*." This clearly shows that to exert the proper mental influence in the dental office or elsewhere we must *think aright*.

Chas. K. Teter, Cleveland: In looking over this paper my mind becomes confused because of the many valuable features and points of interest it contains.

I wish to thank and compliment the doctor for his paper, and I hope that what little I may say will help to impress a few of these facts more firmly in your minds.

I am convinced that it is an indisputable fact that a man's practice depends more upon his personality and the special power he possesses of influencing the mind of his patients than any other factor. Of course, he must possess ordinary skill in his special line of work to be successful, but personality is the prime factor.

The features that I wish to bring out a little more forcibly are: First, the condition of the patient's mind before, during and after general anæsthesia, and how it may be influenced. Second, the necessity of an assistant. Third, the legal considerations.

When patients present themselves as subjects for narcosis, they are, as a rule, much frightened and apprehensive, either from the fear of pain that they imagine they will experience, or fearful lest they may never awaken from the effects of the anæsthetic. The agony some of these neurotic patients experience from this apprehension is pitiful in the extreme. I have had patients express themselves as feeling some special premonition that they would never recover from the anæsthetic, and to anæsthetize a patient in this state of mind would be cruel at least, saying nothing of the increased danger involved. This apprehension and fear must, as far as possible, be removed, for a patient anæsthetized in this state of mind would enhance greatly the actual risk to life, the initiatory stage would be fraught with much discomfort to your patient and muscular activity, and nervous excitement would be greatly augmented, thereby preventing the best results.

A person should not take the responsibility of administering a general anæsthetic unless he has a thorough knowledge of the character of the agent used, its method of action, complications that may be associated with its use, and the remedial measures with which to meet them. Thus the operator who presumes to employ a dangerous drug must possess a fair working knowledge of it in all its phases.

The administrator should have sufficient confidence in his own skill and ability and should be able to impart this confidence to the mind of the patient. It is a fact that if the administrator appears frightened, pale and trembling, as I have seen, he can not inspire confidence in the patient. On the other hand, if you have been successful in removing the fear from the mind of your patient and have so impressed him that he will have confidence in your ability to safely carry him through the ordeal, you have removed one of the greatest elements of risk to general anæsthetics.

Anæsthesia and natural sleep are analagous in more ways than one. During light anæsthesia, as in sleep, there is reason to believe certain sub-conscious processes partly of perception, partly of ideation, continue, of which there is at times vivid recollection and at other times none. This is exemplified in dreams. Under all anæsthetics, during the lighter stages, dreams sometimes take place, and the nature of these dreams we have no means of foretelling; they may be of a pleasant nature or otherwise.

At times the patient can recall, upon awakening, the entire details of the working of the sub-conscious mind, but generally they can not remember them, but are conscious of its general character; the details may be recalled days, or even weeks, afterward.

Most authorities agree that general anæsthetics stimulate the sexual function. This may be accounted for in part to the fact that the genito-urinary reflexes are among the last to be abolished. Again it may be influenced by the patient's mind at the time of the administration, also to the patient's knowledge, before passing under the influence of the anæsthetic, that she will be entirely at the mercy of the operator if a third person is not present. Dr. Charles G. Garrison says: "Any state of affairs of a physical or psychic nature which either increased the flow of blood to the reproductive organs or which, from mental or emotional causes, establishes a tendency in that direction, would serve to guide and give shape to the delusions and hallucinations of the unconscious subject."

We all probably have had experience of this character and realize the importance of protecting ourselves from the charge of criminal assault.

Young women often have voluptuous sensations while under the influence of the anæsthetic, during which time their clothes may become soiled with mucus. Upon awakening they will affirm, with the greatest positiveness, that they have been violated sexually during the anæsthesia.

Some writer has truly said: "Some cases have occurred in which the woman was so positive that liberties had been taken with her person during the anæsthesia that the testimony of relatives who were present all the time scarcely sufficed to convince her that she was laboring under a delusion." Dr. B. W. Richardson, of London, has reported a case of this kind, where the patient persisted in the thought that she had been criminally assaulted, though her father, mother and the doctor's assistant were present during the entire time.

I have not been so unfortunate as to have a case that was so positive in their belief that I had taken undue liberties with them, but I have had a number of cases where they accused me of doing so before they had fully recovered from the effect of the anæsthetic.

One case which was quite amusing and very embarrassing I will relate. This occurred while giving a demonstration of prolonged anæsthesia with nitrous oxide and oxygen, at Nashville, Tenn., in the office of a prominent dentist of that place. A number of dentists were present to witness the procedure. The patient was a mulatto girl about 20 years of age, possessing extraordinary personal attractions, of which she was well aware, though she appeared quite reserved and modest. The operation was of a minor nature, that of extracting four or five roots, which was quickly done. The anæsthesia was continued for some little time to demonstrate that nitrous oxide and oxygen could be administered indefinitely. During light anæsthesia the patient threw up her arms and caught hold of one of the doctors that was standing close by, and a more violent demonstration of sexual passion I never saw. Upon awakening she looked up at me and made this remark: "I shouldn't t'ought dat you all would treat a pusson like dat, when they didn't know it." With emphasis on the didn't know it. A few words of explanation was sufficient in this case to set her right, so the incident passed.

I notice that the prevailing opinion is that this sexual stimulation is more frequently induced in females than in males, especially at the time of periodical pelvic congestion. My experience has been otherwise. I have seen dreams of this nature occur far more frequently in males, and I am sure that this will be found to be the case generally, owing to the fact that men as a rule are far more erotic than are women.

The above facts go to show the absolute necessity of having a third person present during anæsthesia. To free one's self from all blame and wrong intentions, this third person should, if possible, be a woman. The practical value of this admonition can not be overrated.

Another feature: Section 6990, Revised Statutes of Ohio, says: "Whoever uses upon another an anæsthetic, unless at its administration and during the whole time the person is wholly or partly under the direct influence of it there is present a third person competent to be a witness, shall be fined not more than twenty-five dollars nor less than five dollars."

I am sorry to know that this law is being violated right along here in the city. We owe it to ourselves and to the profession to comply with the law, and to protect ourselves from the most serious charge that can befall a professional man, that of criminal assault.

In closing, let me take time to answer the important question so often asked: Has a dentist the legal right to administer general anæsthetics?

Yes; because the vested right to administer anæsthetics does not lie in the possession of a diploma from a reputable dental or medical college, but rather to the knowledge, experience and skill the administrator possesses.

A graduate of dentistry as well as a graduate of medicine is supposed during his curriculum to have had the proper instruction and actual experience in the administration of general anæsthetic. He should be familiar with the proper methods of administering the different agents, their method of action, complications that may arise, and the measures to be employed for resuscitation. If he possesses these requirements he has the legal right to administer all of the anæsthetic agents that are in general use. Anyone using an unknown or new agent for this purpose does so on his own responsibility.

Dentistry has been recognized as a specialty of medicine by the American Medical Association and the International Medical Congresses, so that it does not cause much surprise any more among the medical men when a dentist takes up anæsthetics as a specialty.

In case of death occurring under the influence of an anæsthetic, the operator, in order to be free from blame in the eyes of the public, as well as the law, would have to show that he possessed ordinary skill, and had exercised ordinary care and diligence, also that he was familiar with the character of the agent employed to induce anæsthesia, and familiar with the accidents that might occur during its use, and that he used all remedial measures that are usually employed to prevent such catastrophes. When this can be shown, no judge can conscientiously charge, nor jury decide that the administrator was responsible for the accident.

If, however, the operator could not prove that ordinary care, diligence and skill had been exercised, he might be held liable for heavy damages or possibly be found guilty of the far more serious charge of manslaughter.

THE SIMPLE CASES OF ORTHODONTIA.*

BY VARNEY E. BARNES, D. D. S., CLEVELAND, OHIO.

There are many cases presenting for treatment which are, apparently, very simple and easy of correction, and yet, if thoroughly diagnosed, reveal the necessity of a far more extensive operation than was at first expected. This difference is not realized by the laity and by those dentists who do not make a complete diagnosis with the aid of accurate plaster casts, the X-ray, and physical diagnosis. These same dentists deem it sufficient to diagnose orthodontia cases with an examination of the natural teeth as they are in the mouth, where only a limited area can be seen at a time. The result is, that any tooth projecting out more than its neighbors is selected as the malposed tooth; the operator's eye becomes focused upon this one offender and all efforts to regulate are centered upon this point. Under these conditions, is it any wonder that teeth have been extracted, and are yet, in efforts to correct localized irregularities, *at the expense* and *to the detriment* of the dental arches and the patient possessing them?

---

*Read before the Ohio State Dental Society, December, 1905.

There are simple cases in orthodontia where but one or two teeth are malposed, being rotated, or locked in or out of the arches. These are easy of correction and involve neither the other teeth, nor the changing of arches, nor facial contours. There are *other* cases, *apparently* just as simple, which require a more or less extensive operation, often involving all the other teeth, and a complete rearrangement of the arches; and the restoration of facial contours. The difference in the two types of cases can only be shown by the most complete, careful and painstaking diagnosis, using accurate casts, articulated as are the natural teeth. Then the teeth can be studied individually and as a whole. The face may be seen in repose, at the same time that the cast shows the teeth articulated and facial defects or perfection may be observed.

It may be said that this cast-making and the time-taking diagnosis is unnecessary and useless in many instances. It may be in a few of these, but the casts serve as a record, and the care in diagnosis insures against failure, and one failure does more harm than many multiples of the time spent to prevent it could counteract. "Well begun" may not be "half done," but sometimes will represent more than half when compared to beginning with a wrong diagnosis.

Dentists, as a rule, are considerate of their patient's means, and *too often* suit the operation to the pocketbook instead of to the *needs of the case.* This is especially true of their orthodontia patients. These cases appear, and the operator, feeling and knowing that the patient cannot, or will not, pay the fee that the case should command, decides to treat in the easiest manner *to save expense, time and trouble for all concerned;* or he may be thinking of saving trouble for himself alone. Is this humane? Is it right? Would *you* wish to receive this kind of treatment? What would you think of a physician or a surgeon who suited his treatment or operation to the fee? Are not the cases parallel? The *fee* or the *time* to be given should have *absolutely* nothing to do with the course of procedure in the case.

Simple justice demands that you operate to place the teeth and features in correct relations, and there is only one correct way for each patient. A difficult case cannot be made a simple one.

Alignment does not mean occlusion, but teeth in occlusion are in alignment. The laity are ignorant of the difference, and naturally see none; all they demand is that the anterior teeth be in alignment, and look even and regular. If this can be quickly attained by means of extracting one or more teeth, they *have been* satisfied. And the dentist? Well! he has catered to the laity.

But the past few years have seen a change in this respect. The value of the first permanent molars and of occlusion is more generally understood. Much of this is due to the efforts of Dr. E. A. Bogue, of New York, who has persevered for years in his advocation of the saving of first molars and for early regulation to preserve occlusion and prevent irregularities. Had his writings received better editing and illustration he would today receive much of the credit now too lavishly bestowed upon another. However, no man is the source or originator of modern orthodontia. The orthodontia of today is the result of an evolution, and many are the men who have lifted it to the high plane it now occupies.

The laity recognize irregularities from facial deformities or from malpositions among the 12 anterior teeth. The more intelligent are quick to notice the vast difference between *real* and *makeshift* corrections, and respect the operator, accordingly. They appreciate and are willing to pay for the best service, and should get it. But how about the poor or ignorant? Shall they receive the same services as the rich or intelligent? Certainly! You say they cannot afford it, or at least will not appreciate it! and you take this as an excuse for extracting teeth and simplifying (?) the case. In reality, you know you are doing that innocent patient a permanent injury. Or you may even feel that you are doing a kindness, a charity, perhaps. Are you? Suppose the patient were poor—operate correctly, preserve the teeth regardless of the fee, or if you cannot give the time, in justice to your other patients, show the patient what should be done. Make him realize that the loss of a tooth is a loss forever. If he is poor or unappreciative now, and cannot, or will not, afford the operation, will he always be so? Is there not a chance that the future will bring a change in circumstances or appreciation? And if it does, the patient will still have all his teeth and can have them regulated. If the patient be ignorant or determined on simplifying (?), still *be just* with him—show him why it is wrong to extract, and refuse to operate in any but the right way. Let the other fellow, if there be one, shoulder the blame. He will get it later on. As I have said many times, and repeat, extraction is justifiable only after other methods fail, and then only after consultation.

Extractions are not the only methods that have been used to simplify cases. Too often but a few teeth in *one* arch have been regulated, or rather put into an alignment, with the result that a partial, or entire relapse occurs. The operator is justly blamed; but orthodontia receives credit for a failure that does not belong to it. This is unjust.

The excuse often given for a partial regulation is, that most of the teeth are in proper occlusion and must not be disturbed. In reality, *these very teeth* are the ones responsible for the *more evident* malposition of other teeth.

The expansion of many temporary arches involves but a simple operation, compared to what would be necessary were the irregularity allowed to progress with the eruption of the permanent teeth. The absorption of the temporary alveolus is coincident with the eruption of the permanent teeth, which have their alveolus formed around them after eruption. If this formation can be compelled to occur about the teeth in a correct position, it is very evident that the retention will be permanent, and the case, therefore. comparatively simple.

Still another class of apparently simple cases calls for attention. These may be typified as the cases where teeth have been prematurely lost, in one or the other jaw. Nature tries to close the space, as she always does, and the opposite arch contracts and tends to come to the now too small remnant of an arch. Opposition to the insertion of artificial teeth or attempts to simplify (?) have generally resulted in the extraction of still more teeth to even up. Occlusion is permanently spoiled to make the anterior teeth look better. The bite becomes too close, eventually the molars and bicuspids are lost, far too early, and the incisors take on the function of grinders and are rapidly worn down. These are conditions that all of us have seen, or can see, if he will but look. Is it not a far more rational procedure to expand the cramped arches and hold open the space of the lost tooth? The case and the patient must decide whether that space be maintained by plate, or bridge teeth, or by bar retainers. But it must be maintained, for *all the teeth depend upon it.*

Recall, if you please, the instances in which it has been your lot to fill or treat tipped molars or bicuspids. Have not these cases caused you more trouble than others? Are not these the teeth in which pulp nodules form, or in which fillings fail, or are only serviceable in preventing further decay? Shall we go on cleaning, filling, treating, crowning and extracting teeth, and then bridging or fitting plates *after* nature has tilted the teeth and *failed* in attempting to close the spaces? Or, shall we, as progressive dentists, glorying in our profession, *dare to maintain* the spaces as soon as and whenever teeth are lost, whether they be temporary or permanent? Let us face these problems, master them, and thus preserve the remainder of the teeth in occlusion, and fulfill the real object of our profession! Further, let us watch our little patients, and see to it that their temporary arches are preserved in full until the permanent teeth are ready to assume their positions and responsibilities. If these arches are not correct, it is our duty to see that they are. Adenoids, enlarged tonsils, malnutrition and premature or delayed loss of temporary teeth are all causes of many of the *real simple cases* which require early counteraction.

Simplicity is always desirable, especially in this complex modern life of ours. Simple treatments for children, during the growing periods, magnify the results obtained in establishing the occlusion of the permanent teeth. The results are permanent and are attained before the age at which life's responsibilities begin to assert themselves.

But in our search for simplicity and ease of operation, let us not be led astray and sacrifice the *real* for the *apparent!* especially as the *apparently simple* operation, *simplified* (?) by an incorrect operation, generally proves more difficult than the correct method.

Finally, let me again urge the necessity for the perfect and painstaking diagnosis, so that the simple and easily treated cases may not be confounded with those that require our utmost skill and perseverance. In the end, humanity and our profession will be benefited through our doing—simply our duty.

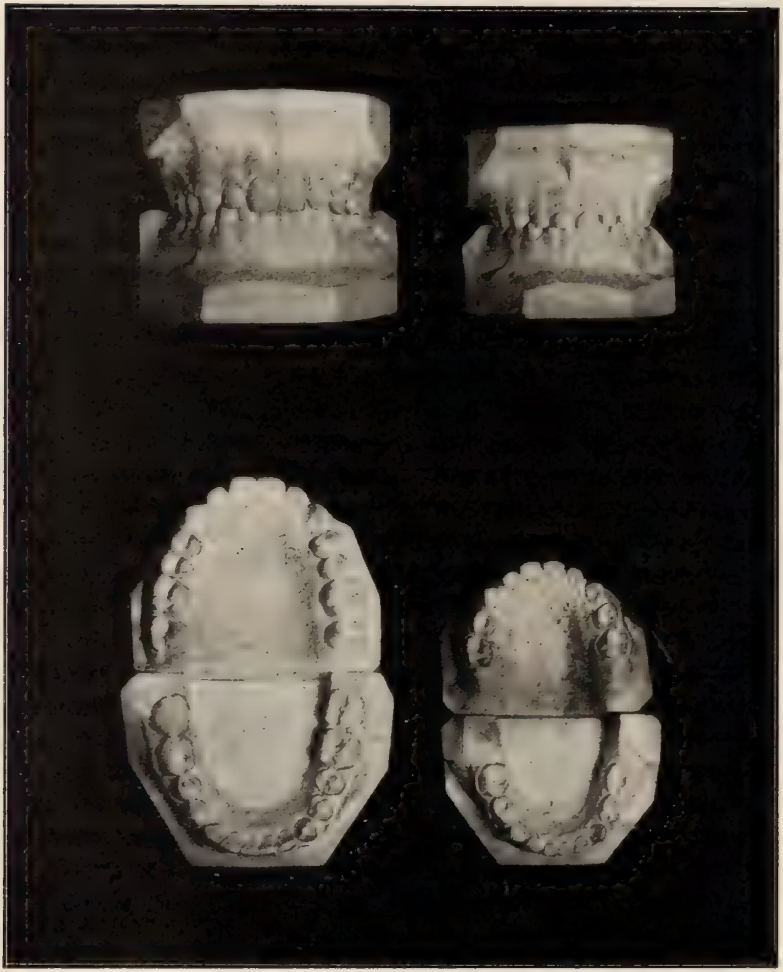


Fig. 1.

FIG. 1.

To diagnose simple or difficult cases in orthodontia, it is necessary to have a clear idea of the normal.

The illustration shows normal *permanent and temporary* dentition at the respective ages of 15 and 5.

NOTE:

Similarity in size and shape of the arches.

Perfect antagonism of the occlusions.

Absence of inclinations in permanent set.

Fullness of gums in the temporary set.

Spaces between centrals and laterals, laterals and cuspids, and cuspids and first molars in the temporary teeth. These *spaces are vital* to a normal temporary dentition and should begin to show, in a normally developing child, at from *two to three years of age.*

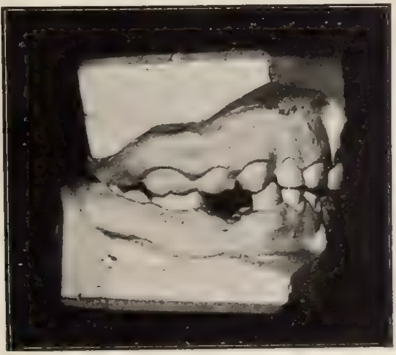


Fig. 2.

The spaces and gum fullness indicate most effectually the normal development of the dental arches, and their *absence indicates inevitable malocclusions.*

FIG. 2.

Premature loss of first lower temporary molars. (Both sides being similar). *This is a real simple case* that might become very serious *had the space not been maintained.* The cuspids were banded and a retaining bar run back to the second molar and kept there until bicuspid erupted. Patient seven years old.

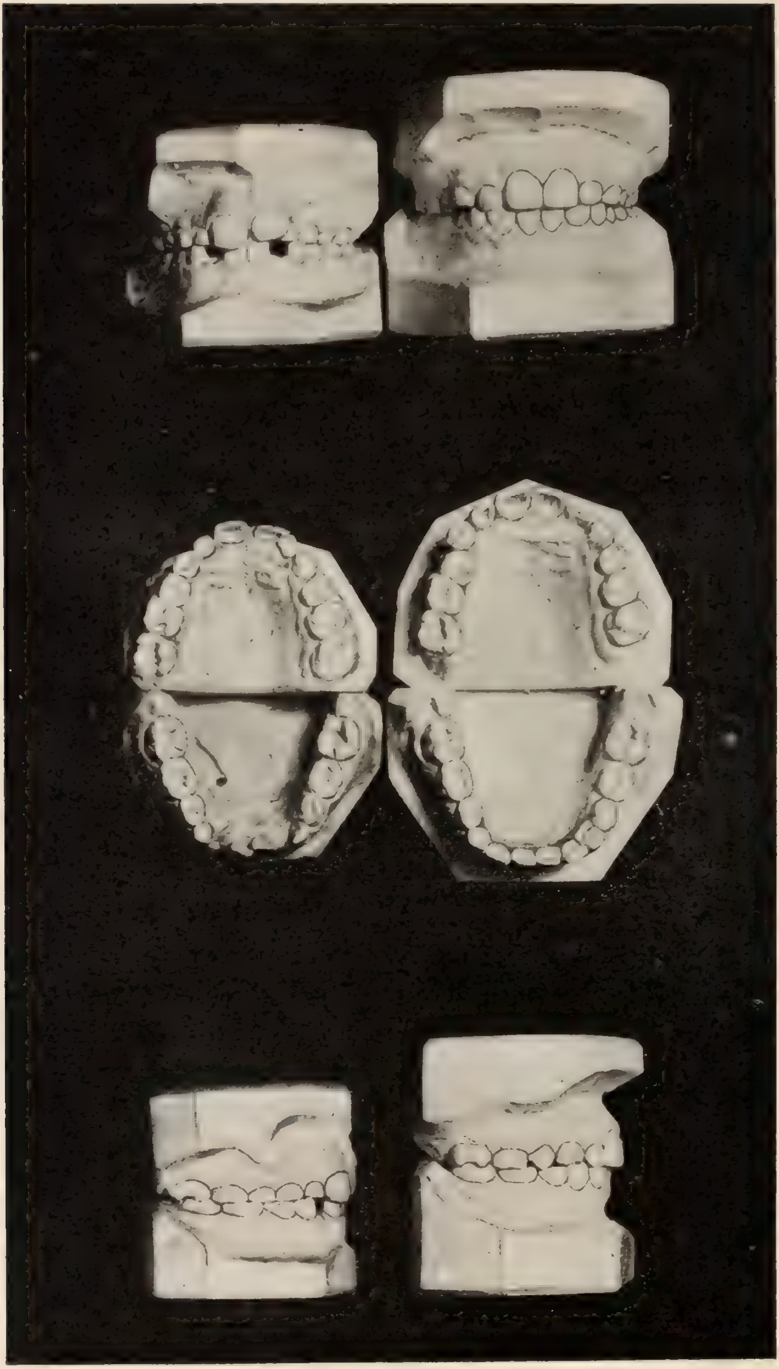


Fig. 3

FIG. 3.

These photos show the results of treating a case that is *really simple* if begun at the early age (in this instance 8 years). The results shown being two years later, with retaining appliances still in position. The duration of treatment being two periods of five and three months, separated by a period of development.

Undoubtedly another short period of treatment will have to be gone through later, when other teeth erupt, which were so long under the baneful influence of cramped and too slowly growing arches.

The treatment consisted of expansion of the arches and rotation of lower laterals, the latter being quite difficult and their correction took the larger part of the time expended.

NOTE:

Absence of growth spaces between cuspids and first temporary molars.

Occlusion of temporary teeth perfect as far as the bare occlusion goes, but occlusion in the broad and full sense not perfect. Arches too narrow.

Large centrals and rotated laterals in lower.

This is a case that would have eventually developed into a most difficult malocclusion of the permanent teeth had not the regulation been begun early. It would have been better to have begun far *earlier,* or at the time to permit the normal eruption of lower permanent laterals.

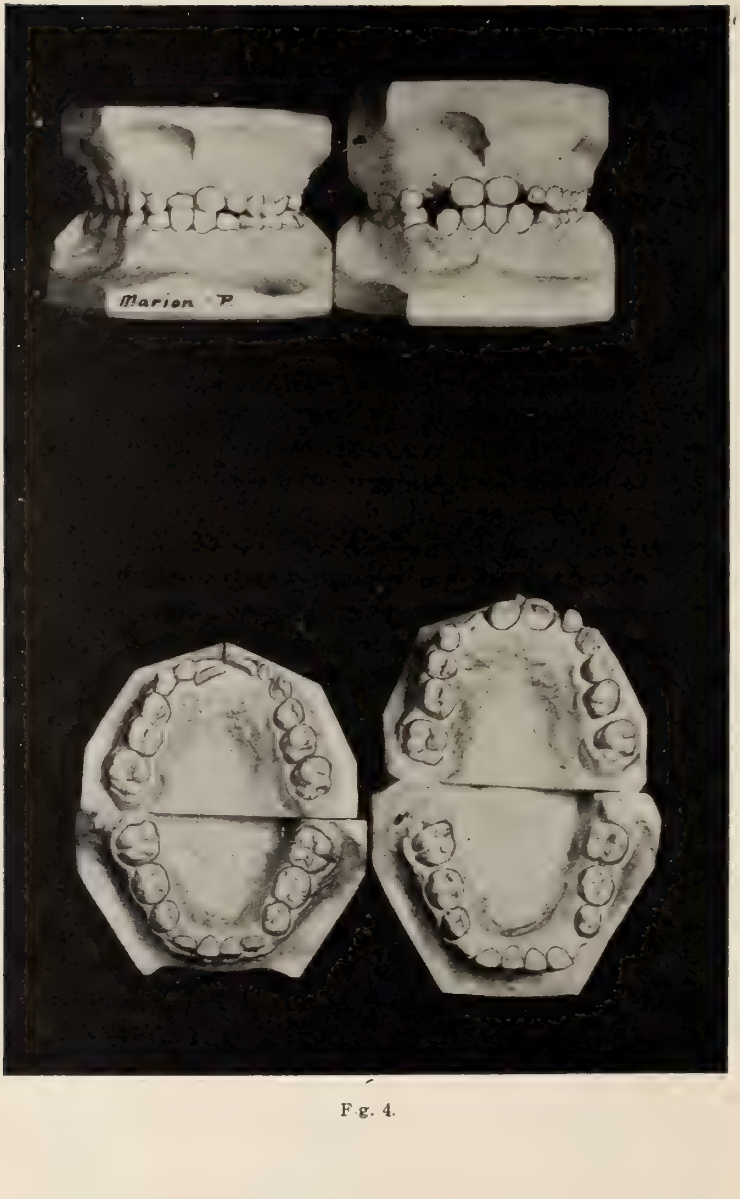


Fig. 4.

FIG. 4.

Front and occlusal views of a case *apparently involving the regulation of only one tooth*, also showing the good results of early expansion. Close examination reveals the facts that—

Both arches were crowded and too small anterior to the permanent molars.

The lower cuspids had been prematurely lost and their space is almost closed.

The upper central was inlocked and there was not room for the eruption of the laterals.

Growth spaces between upper cuspids and molars were missing. Patient eight years old. A case not so simple as at first supposed, but still comparatively simple if treated at this early age.

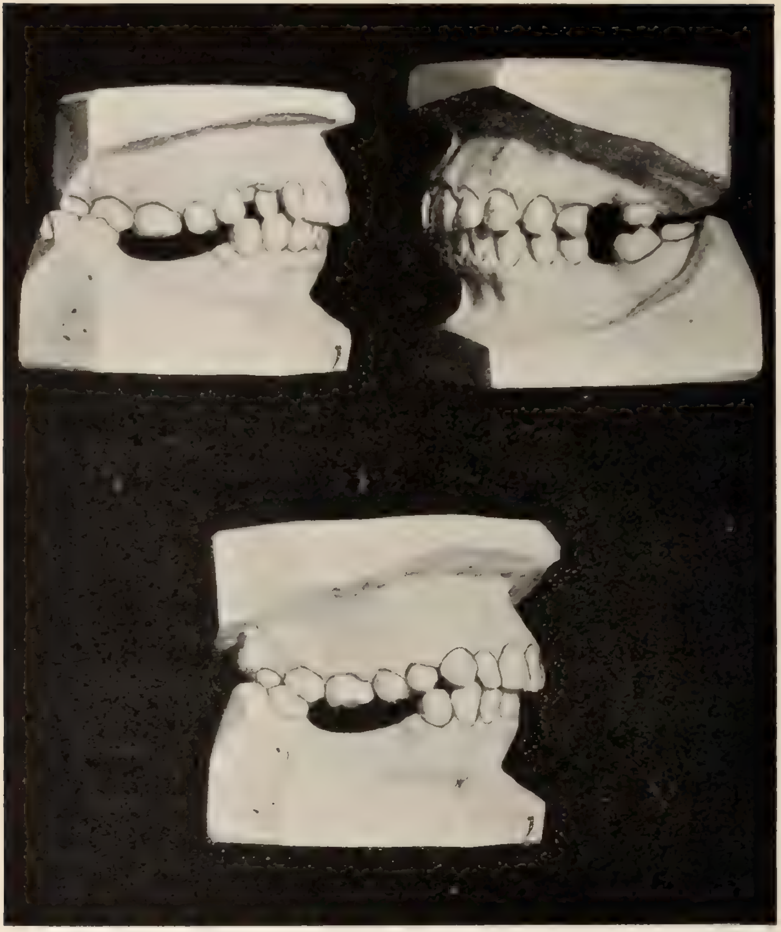


FIG. 5.

A case referred for regulation of cuspid, which shows inlocked. This is characteristic of many of the so-called simple cases where only one tooth needs treatment.

The bringing of the cuspid into line makes the front appearance of the mouth and teeth *appear correct and regular for a short time after the treatment.*

The loss of so many teeth posterior will ultimately, and not very long, either, mean an acquired irregularity far worse than the former case of the cuspid. Note the tipping molars and bicuspids that already indicate far worse conditions to come. Note also the lower cuspid, on the left, is posterior to the upper.

This *is clearly not a case involving but one tooth,* but it is one in which *one tooth* is only *a small factor* of that which needs attention and treatment.

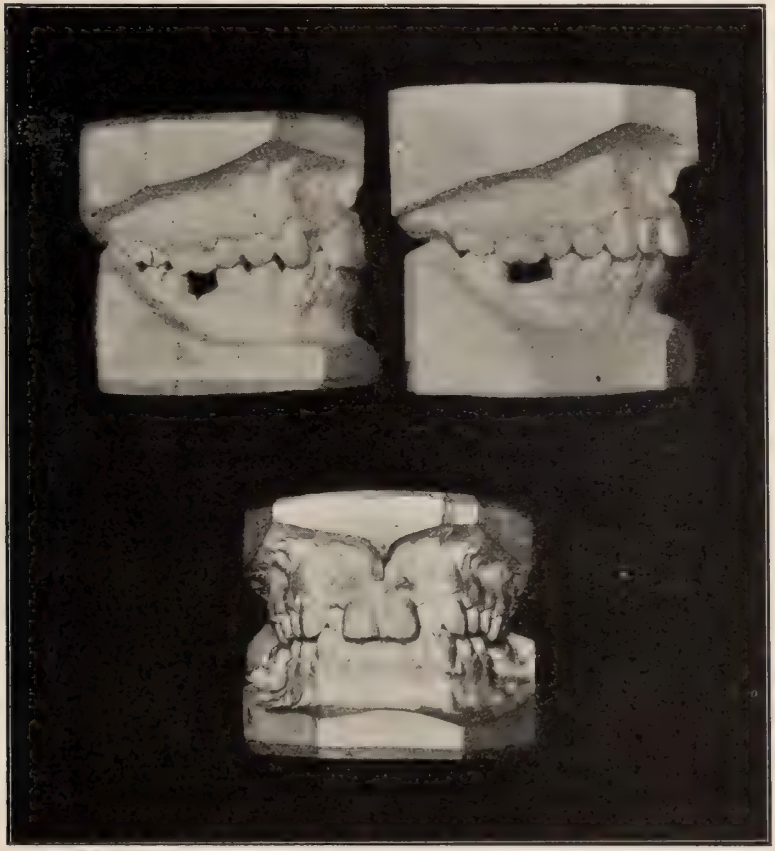


Fig. 6.

Occlusion should have been restored by regulation and then maintained with plate or bridge teeth.

FIG. 6.

Right and front views of a case apparently involving only the

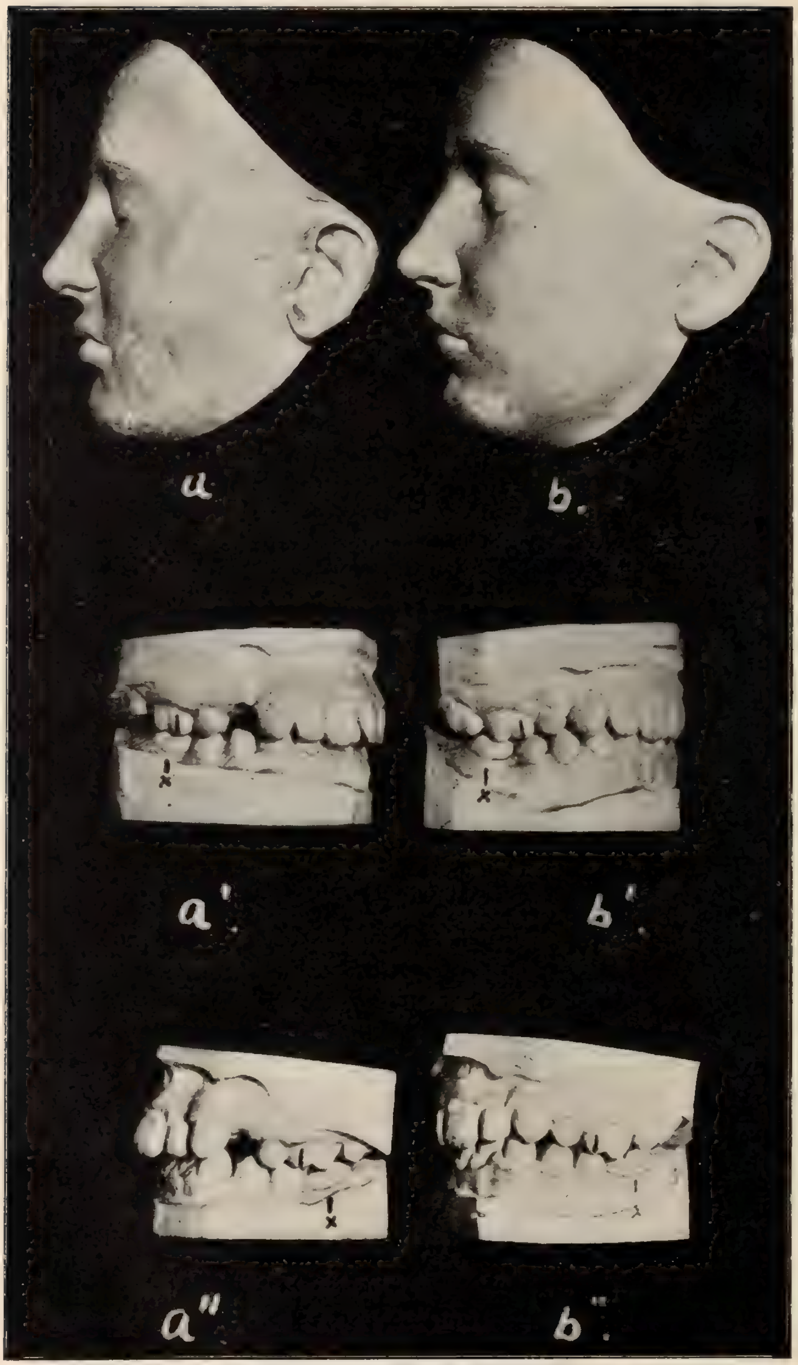


Fig.7.

bringing out of laterals into the arch. A hasty and superficial examination might lead to just such fallacious treatment.

Right view of the partial results attained, showing the straightening up of molar and bringing out of lateral, and also a better occlusion of bicuspids. The case is typical of many in which the lower first permanent molars are lost. In all such cases the second molars tip forward and the bicuspids shift and tilt back wards and are followed eventually by the cuspids and incisors.

In this particular case the inlocking of the laterals have partially prevented a greater backward shifting of cuspids and incisors, but they have shifted somewhat, as is proven by the *contracted upper arch,* not enough space being left to permit the placing of laterals in the arch without expansion. This being done, nothing will prevent the lower arch contraction unless the lower is expanded and the spaces of the lost molars maintained.

FIG. 7.

A case caused by the *extraction of lower first molars,* treated in 1899 so as to *simplify*(?) by the *extraction of the upper first bicuspids* and then closing the space by retracting cuspids and incisors.

A is the left view of a smoothed cast of the face taken before operation, showing chin in good proportion, but the lips retruded with excessive curves, and showing the heavy line posterior to the ala of the nose. (This cast was smoothed with sandpaper and is not the best of evidence, and therefore only approximates the true conditions).

A′ is right view, indicating extracted bicuspid and molar.

A″ is left view, indicating extracted bicuspid and molar.

B, view of unretouched cast of the face after treatment. This evidence is reliable and worth full value. The depression back of nose appears less and the lips have almost ideal curves in relation to one another, while the chin is in the former position. *But this face is not correct yet, for the lips, although apparently right, are really not in the right relation to the rest of the face. The lips are retruded and the lower part of the face is thus left undeveloped and out of proportion to the upper portion.*

The patient was about 14 years of age at the start of the operation, which means that the features were not fully developed. With the later and fuller development of nose, forehead and molar

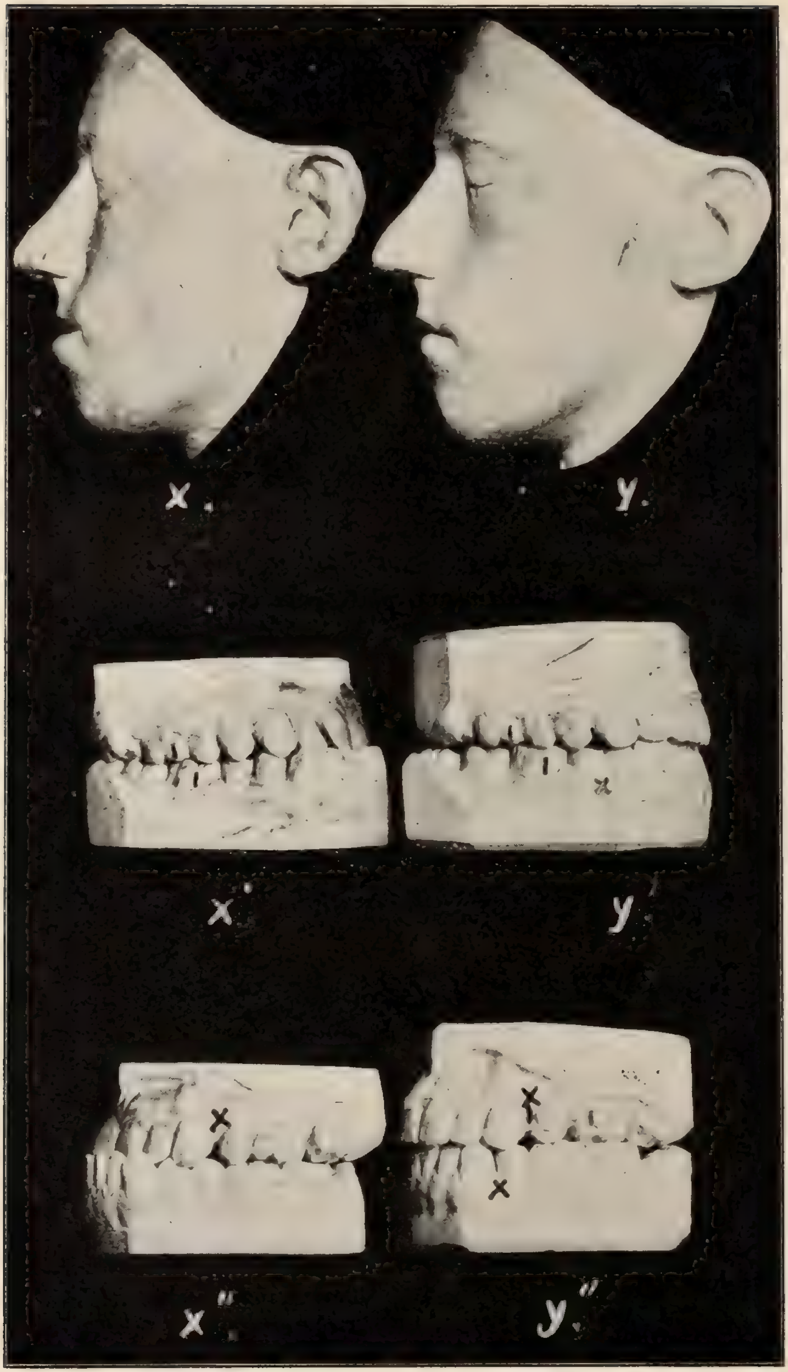


Fig. 8.

prominences and the certainty of a much smaller development of the lip and cheek region, it must be evident that age must show even less proportion in the face than now. There must then always be the childish or immatured expression in this face as a direct result of extraction.

B′ is right view of completed case, showing evenness of incisors and cuspids and closing of the spaces. Apparently, to the casual observer this is successful treatment, but it cannot be compared to *what might have been had the upper arch been expanded along with the lower, and the spaces of the lost lower molars maintained.* The molar and bicuspid occlusion would then have been good, whereas now it is as poor as could possibly be.

B″ is the left view, showing similar condition to right side. It may also be noted that the "curve of compensation" is reversed, putting far too much work upon the incisors. Also, the molars and bicuspids *have shifted and tipped forward, in spite of rigid stationary* (?) *anchorages they bore in retruding the anterior teeth.* This is an almost invariable result; in fact, there is really no such thing as a stationary anchorage—it is always relatively, not absolutely stationary.

FIG. 8.

The before and after treatment views of a case, involving what might be taken for a lower protrusion. Or, an upper retrusion, a case in which the fact of the left upper first bicuspid having been lost has led to the extraction of the lower first bicuspids and the retrusion of the lower cuspids and incisors to give an approximate result.

At the time this case was treated (some six years ago) it was considered better to *simplify by further extraction* rather than open up lost space in any arch which remained approximately in shape in spite of that loss.

It is intended that this illustration shall show the evils that have resulted from such a course of procedure, that we may all profit by them. We learn more, in many instances, from honest mistakes than we do from our greatest successes.

X shows the face before treatment. The lower lip at once attracts attention on account of its prominence. It was decided at the time of the treatment that a retrusion of the lower teeth would benefit the face, and with the bicuspid extraction, permit the jumping of the bite without opening up the space for the upper cuspid, which was lost long before the case presented.

Y shows face after treatment. The lip relations were decidedly improved, and the whole face is better, in a measure, in that no particular part is thrown into greater prominence than the rest, unless it be the nose.

This corrected face is, however, *weak, when it should be strong;* the nose is too prominent for the other relations. *The upper lip now droops downward and inward and the lower is too straight and shapeless.*

How much better it would have been to have expanded the upper arch, inserting a space retainer or an artificial tooth for the lost bicuspid, and thus saved the lower bicuspids.

This expansion would have filled out the hollow cheeks, pushed forward the upper lip and released the lower lip from the wrong pressure of the upper lip.

The face would then have been strong and in keeping with the rugged frame of the 18-year-old possessor of it.

Look at the occlusion in both the before and after models. It is only an antagonism at a few points and in strong contrast to the nearly perfect one that it ought to have been.

A REVIEW OF SURGERY.*

BY DR. W. E. DAVIDSON, HOLDREGE, NEBRASKA.

In giving this paper I shall only attempt to give a review of surgery as found in the journals for the past year, as suggested by the committee.

For a systematic treatment of the subject we will divide it into three divisions, viz., Diagnosis, Preparation, and Operation.

As to diagnosis, let us bear in mind the fact that the ability to recognize a disease is the foundation upon which rests the success of the surgeon. "Be sure you are right, and then go ahead."

It seems to be the tendency of modern surgery to magnify the importance of manners and methods, and at times to forget that all our real advances and most substantial achievements depend now, as always, not on our inventing or blindly imitating new plans of procedure, but on our alertness in diagnosis and our faithful allegiance to sound surgical principles, as they are gradually developed from our growing knowledge of anatomy, physiology and pathology.

---

*Read before the Nebraska State Dental Society, 1906.

It is sometimes difficult to know the line that divides surgical diseases from non-surgical, as it is somewhat vague and indistinct, and one of the most common sources of error in treatment arises from the fact that we are often in doubt as to when and how far we may trust the reparative sources of nature and under what conditions we should resort to prompt operative interference. We know that many morbid conditions may yield more or less perfectly to nature's reparative powers, and we have learned of other morbid conditions that can not be modified, corrected or removed except by mechanical means. But until the line that divides the limitations of rational medicine from the boundaries of surgery is more clearly defined, the internist and surgeon will often encroach on each other's proper field, and the best endeavors of both will fail to produce the satisfactory results. To establish this line we must again seek assistance from the physiologist and pathologist, for we need to know not only more of the functions of the different tissues of the body in health, but we must become better acquainted with the reparative, absorptive and phagocytic powers of these tissues in the presence of the various pathologic processes, and in the different stages of the disease.

You know Garretson says, in his "Oral Surgery," that he believes in classifying as malignant all forms of tumors of the mouth which he cannot diagnose as being positively benign; and that, gentlemen, is the only safe way to handle any of these lesions or neoplasms of the mouth. We may frequently remove growths which are sometimes said to be benign, and might not do any harm. Appreciating that the tendency of all benign growths in the oral cavity is toward malignancy. The dental surgeon often makes the mistake of trying to remove those conditions by using caustics and remedies of that kind, which only set fire to the tindre, so to speak, thus hastening the malignant aspect of the growth, when if he had realized this tendency at once and recommended the knife he might have saved the life of the patient.

Perhaps the greatest aid to the dental surgeon, along the line of diagnosis, is the X-ray. Dr. Brophy says, in *Dental Hints*, in regard to the diagnosis of neuralgia by means of the X-ray: "In any case of neuralgia it is our duty to have a radiograph taken.

If the skiagraph be negative, you have done your duty. An inverted third molar is a common cause of facial neuralgia, the crown of the tooth pressing on the nerves passing through the inferior dental canal. If this is the cause of the neuralgia the X-ray photograph will reveal it, so there remains no question about the cause, and we are ready to prepare for the relief of the patient."

I wish to refer you to a paper found in *The Cosmos* of January, 1905, by Dr. Mathew H. Cryer, of Philadelphia, entitled, "Some uses of the Roentgen Rays in Studies of the Internal Anatomy of the Face." This paper is well worth your time to read and study the photographs.

An interesting diagnosis of empyema of the antrum of highmore, by Dr. Stott, is found on page 8 of *Cosmos* for January, 1905.

On page 262 in *Cosmos* for March, 1905, you will find valuable information on the diagnosis of various conditions and diseases.

PREPARATION OF THE PATIENT.

But we must pass on to the next divisions: that of Preparation of the patient. This, perhaps, is one of the details we are most prone to neglect, and yet it may mean the success or the failure of the surgical operation. It is difficult to give specific rules, as we have to treat the individual according to the temperament, physical conditions, etc. But do pay attention to the needs and comforts of the patient and you will quite often be well awarded for it. Especially be careful not to overtax the nervous system of the patient.

Perhaps, right here, a word as to aseptic precaution would not be amiss. How many of us stop to consider the extraction of teeth as a serious surgical operation. We are too prone to forget that extracting a tooth inflicts a very deep wound in both hard and soft tissue in the human body, which of course leaves an opening for the ingress of infection germs. How many of us ever take the time or thought of thoroughly disinfecting the tooth, to be extracted, especially that portion under the free margin of the gum. Why should we leave this infectious debris there to be forced up with the forceps into the lacerated tissues? Thus causing inflammation and suppuration, or even endanger the life of the patient. So let us be careful in the preparation of the parts for this much practiced operation.

Now, as to the third division or the operation, I shall only give you a brief review of the procedure of a few cases: One of a great deal of interest to us is the avulsion of the terminal branches of the trigeminal nerve for the cure of trifacial neuralgia. In order to avoid the failure in operations for trifacial neuralgia which results through regeneration of the nerve across the narrow excised portion, Dr. Laplace has conceived and successfully carried out the plan of avulsing the entire nerve, even to its most peripheral branches.

OPERATION FOR TRI-FACIAL NEURALGIA.

After exposure of the nerve, it is caught in a special curved hemostatic forceps; the forceps are now gently turned from left to right, winding both approximal and peripheral parts of the nerve upon itself. This must be done so slowly that a single turn of the forceps will require two minutes. The nerve gradually yields, and the winding is kept up until it breaks. It takes from 12 to 20 minutes to obtain this result. The author reports four cases thus operated on in which up to the present time there have been no recurrences.

INTERSTITIAL INJECTION OF PARAFFIN.

In March of last year Lagarde read before the Paris Academy of Medicine a paper that attracted a good deal of attention, concerning an instrument designed to facilitate interstitial injection of paraffine. With this new syringe the softening of paraffine can be effected by mechanical means, which enables injections to be made no longer heated, but at the surrounding temperature. To this end the piston is mounted on a rod provided with a screw-thread, and by a slow and gradual screw movement the piston advances, pressing against the paraffine, which finally issues from the end of the canal in the shape of a doughy thread. M. Lagarde adapted to the body of the syringe a fixed handle at right angles, which enables the instrument to be firmly held during the operation.

The phenomenon of driving out, in a condition of paste, at one end of the barrel of a syringe, paraffine put into the other end of the barrel in a solid form, is certainly a very curious one, but easy to understand, if we have at our disposal sufficient propulsive power to drive the piston pressing on the paraffine it would even reduce it to a liquid, if the paraffine could find no way out.

With a suitable instrument based on this principle, all the drawbacks sometimes connected with the heated paraffine injections would at once be abolished—such as burns, escape of the paraffine into the surrounding tissues, etc. And particularly for submucous injections, and for restoring atrophied turbinate bones, would this injection of cold paraffine be of the greatest importance.

ULCERATIONS OF THE GUMS AND TOOTH SOCKETS.

Dr. A. W. Harlan, of New York, on the "Surgery of Ulcerations of the Gums and Sockets of the Teeth," says: "An ulcer on the gum in the human mouth, when not specific, may be due to a variety of causes. Those that we have to deal with are usually from traumatisms or local infections, and they may be located on any portion of the gum or roof of the mouth.

After a differential diagnosis is made, any removable cause of the irritation—a plate or other foreign body—should be sought for and remedied. The surface is then disinfected and dried with sterilized lint, gauze, or other suitable substance. It is then anæsthetized, and with a suitable curette the surface of the ulcer is thoroughly scraped so as to produce a gentle hemorrhage, which is not to be disturbed unless it be very excessive, when it is carefully wiped away. The parts are protected for a few minutes, and the surface is left with adherent serum and blood to be washed away with the saliva. The patient is required to rinse the mouth with a suitable mouth-wash."

CHRONIC ALVEOLAR ABSCESS.

A condition which we encounter almost daily is that of chronic alveolar abscess; I will give you a brief review of Dr. Schamberg's paper on that subject.

The operation that he advocates consists of a rapid ablation of the diseased area, including the end of the root, by means of a swiftly-running surgical bur. The mouth having been washed with an antiseptic, the lip or cheek is held out of harm's way by means of a retractor. The point of entrance having been selected with a view to reaching the end of the root, the bur is firmly held to the part so as to prevent its traveling and doing damage to the soft tissue. A sharply defined round opening is thus made through the gum and alveolus, and the end of the root is burred away within a minute's time. The rapidity with which the burs cut makes it possible to perform the operation under the influence of nitrous oxid.

If there be any question as to the bur having reached all parts of the abscess, it is well to curette thoroughly. After syringing the cavity thus produced, it is packed tightly with iodoform gauze. The patient is instructed to return the next day, when the wound will be free of all bleeding and a good view of the end of the root be obtained.

If at that time there is any further trimming of the root necessary it can be readily done with a smaller bur with little or no pain. If the bleeding should then obstruct the view, a pledget of cotton dipped in adrenalin chlorid and packed in the wound for several minutes will soon clear the field of blood. A topical application of cocain can be made if the peridental tissues prove to be sensitive.

It is always well to be sure that sufficient of the root has been cut away and that the end of the canal is properly sealed before allowing the wound to heal.

Teeth in which the canals are open may be filled as soon as all pus discharge has ceased. With a liberal exposure of the end of the stump, the canal can be more readily filled after operation. Both the canal and the filling are less likely to be impregnated with pus organisms several days after the operation, and the filling material can be smoothed off through the wound and the surplus removed.

Great care must be taken to have the excavation in the bone fill from below with granulations. In packing the wound it occasionally becomes necessary to spread the external opening so as to prevent its closure before the inner portion has filled with healthy tissue.

The slowness with which these cavities in the alveolus heal should not, however, influence one against the operation, for it is far better for the patient to have a comparatively healthy wound which may require attention for some time than to permit a so-called "gum-boil" to periodically discharge its contents into the mouth. It is difficult to estimate the extent or character of harm that is done the general system from the ingestion and absorption of pus in the mouth. It therefore becomes our duty to cure as promptly as possible all suppurative affections about the mouth. If the usual treatment of a chronic alveolar abscess fails to cure, surgical methods should be employed, and when the condition is found to be such that a cure be reached in no other way the tooth or teeth at fault should be removed.

Allow me now to close with a few quotations as to the possibilities of surgery.

THE POSSIBILITIES OF SURGERY.

No thoughtful student of today can fail to be profoundly impressed with the surgical work and achievements of the past century. Revolutionizing discoveries have been made, new principles established, and perfected methods of procedure evolved in such rapid succession that we who stand just within the threshold of the twentieth century, contemplating with wonder and gratitude the triumphs of the past and trying to formulate plans for the future, may feel that there is little remaining for us to do in hastening the progress of surgery.

The story has often been repeated how Lord Lister, as a young practitioner, announcing to Syme, the great surgeon, whose daughter he had married, the fact that he was about to devote himself to surgery, was met with the discouraging statement that little remained to be done in surgery, and that there was no prospect of evolution in its art or practice that would ever make it worth while as a man's life-work. How Lister and a whole galaxy of workers have disproved this statement is now a matter of common history, and we cannot view the future without realizing the fact that it is replete with possibilities grand and farreaching, and destined to exert an influence as great upon the sum of life and happiness as anything previously achieved. The announcement of Roentgen's discovery came down upon us well-nigh like a bolt from heaven, whose radiant light illumined a region which the wildest imagination of man had never conceived issuing from darkness.

What future there may be in the use of various rays of light is only hinted at by the recent achievements. The whole immense field of neoplastic pathology is, we feel convinced, destined to undergo a cultivation whose results may fill to overflowing the granaries of science.

Anatomical knowledge and operative skill, we may be willing to acknowledge, have possibly already put forth the best that is within them. They constitute, however, but two of the myriad sides of modern surgery, to which physics, chemistry and biology are destined to add so greatly that he would indeed be rash who ventured to forecast the future.

We know not whither next will fall the light, but we know that the triumphs of perhaps a few years more to come are destined, if not to overshadow, at least to equal the wonders of the last generation gone.

I trust that on this occasion we may find ourselves in sympathy with the thoughts suggested by these lessons of the past and interested to consider those surgical problems that confront us today. For if we are to do our part toward the advancement of surgery we must seek the elements of future success in the study of present failures.

And if we rightfully construe the lessons taught by the work and workers of the past we will not long remain unmindful of the responsibilities and opportunities of the present. For they reveal more or less distinctly the great undeveloped possibilities of surgery that await the solution of problems which we and those who follow us must try to solve, one by one, until that time shall come when there is no mortality or suffering from surgical diseases.

DISCUSSION ON EROSION.*

BY HENRY BARNES, CLEVELAND, OHIO.

"What shall we do with our cases of erosion?"

The question has often been asked, but as yet never satisfactorily answered.

Leaving out of the discussion much relating to the particular chemical agent causing the destruction, because, as yet, so largely speculative, we shall advance a reason for its peculiar action, granting, of course, that the destructive agent is an acid. The paper exhibits a knowledge of authors upon this subject and also careful personal observations, clinically.

---

*Discussion of paper by Dr. Hamm, read at Ohio State Society, but received too late to publish with the paper, which appeared in July SUMMARY.

It does not seem a rational procedure to prescribe the phosphates, because erosion is found almost exclusively in those of an age in which the teeth are supposed to possess these elements in due proportions, and Dr. Black informs us that soft teeth and hard teeth present no evidence differentiating the one from the other.

The essayist eliminates the term abrasion, using erosion, and meaning thereby, I take it, the chemical action of an acid upon the hard surfaces of the teeth. In a paper read before the Northern Ohio Dental Association, a few years since, I used the term abrasive erosion, or erosive abrasion, meaning a chemical and mechanical action. This term is a proper one, I believe, because years of observation and examinations of many cases of so-called erosion have shown that the destruction of tissue is along lines over which the tooth-brush has traveled, induced by the way in which the brush is held in the hand. I do not consider the brush alone responsible for this condition, but, erosion being present, is very often accelerated in its destructive agency by the use of the tooth-brush. In confirmation of this contention, your attention is called to this fact: When erosion is found, as it often is, at or near the cervical borders of the laterals and cuspids, its direction is from the point of inception upon the laterals, obliquely ranging to a higher position upon the cuspids in the upper teeth, often showing the gum festoon broken and the gum tissue elevated into a distinct fold, showing, very plainly, a mechanical interference. This groove will correspond to the direction given the brush from the elbow movement. Observing these cases for a long time, I found many where only the teeth on one side were involved, or one side would present greater destruction than the other. For this peculiar action there must be a cause, and this cause I believe to be the result of sleeping upon the side upon which the destruction is greatest. Granting this to be true, it would seem to point to an acid condition of the oral fluids, the teeth resting in this fluid during sleep. The paper notes the almost complete absence of erosion upon the lingual surfaces of the teeth, which is probably due to the fact that the tongue covers these surfaces and the sub-lingual fluids are alkaline, while the buccal are acid. Your attention is called also to the fact that during sleep the teeth, except in a mouth-breather, are slightly apart, so that by capillary attraction fluids are held between the incisal and grinding surfaces, producing erosion and erosive abrasion from grinding or masticating. I agree with the writer that the labial follicles are often enlarged and inflamed over labial erosion. There are to be found bays or indentations in the lips which may explain the peculiar and often inexplicable manifestations of erosive action, as found on many individual teeth. Many instances of peculiar action might be cited, but they may all be accounted for, in my judgment, by capillary attraction. The result of these investigations has resulted in a method of brushing of the teeth, and prescribed for my patients. The method prescribed is as follows: Take the brush in the hand as you would your pen, the bristle lying parallel with the long axis of the teeth, and brushing from the wrist, as this movement keeps the handle of brush always at right angles to the long axis of the teeth. As it is impossible for many to brush the teeth without constricting the cheek muscles, I direct them to "tongue talk" during the operation of brushing (which is simply using the tongue in talking, as this absolutely releases all the muscles).

ORAL HYGIENE A NECESSITY TO HEALTH.*

BY BURTON LEE THORPE, M. D., D. D. S., ST. LOUIS, MISSOURI.

The medical profession and the layman seemingly do not realize the importance of the hygienic care of the oral cavity, which is the incubator of many of the systemic diseases that the human system is heir to.

Frequent cases of disease of the intestinal tract, such as dyspepsia and gastritis, may primarily be traced to infection caused by decayed teeth and defective hygiene of the mouth due to the accumulation of salivary calculus (tartar), the remains of diseased roots of teeth, which cause abscesses, hypertrophied (spongy) gums, etc., all of which contribute to systemic infection.

Some cases of appendicitis no doubt result from infection from unhygienic conditions of the mouth. The writer has seen one

---

*This article was written for *The Medical Brief*, but THE SUMMARY was given the privilege of publishing.

appendix which contained an amalgam filling, several bird-shot and several bits of calcic material, apparently broken loose from around the teeth, and swallowed.

It is a general accepted belief that *the mouth is the breeding place of the bacillus of influenza and that oral sepsis is the predisposing cause of influenza, and that patients having hygienic mouths are practically immune from influenza.*

In diagnosis it is the duty of the medical practitioner to examine the condition of his patient's teeth and gums, and if carious teeth, inflamed and spongy gums, roots and their sequelæ, i. e., abscessed conditions, etc., are in evidence, they should be immediately referred to the dental practitioner for treatment. No greater service can be rendered the average man, woman or child than, at least, regular semi-annual visits to the dentist, who should remove the salivary deposits, thoroughly polish all surfaces of the teeth, treat and cure hypertrophied gums and repair all defects resulting from caries, and the instruction of when and how to brush the teeth and gums and the prescribing of a proper tooth-brush and antiseptic mouth-wash.

Few patients know that the teeth and gums should be brushed immediately upon rising in the morning, and again just prior to retiring at night, and after each meal where it is possible. The brushing and cleansing of all mucous tissue, i. e., gums, tongue, buccal and labial cheek and lip muscles, and the palate tissue, is of equal importance. This may be accomplished by a *stiff-bristled, flat-surface* tooth-brush, with which the gums are massaged with a rotary motion, brushing the lower gums upward and the upper gums downward toward the necks of the teeth.

The tooth-brush with a curved handle and irregular rows of bristles should be discarded, as *it does not* remove the deposits of bacteria and food debris lodged around the tooth and gum surfaces, as does the flat-surface brush.

Another useful instrument indicated for patients who continually possess "the constipated" furred tongue, is the tongue-scraper—a narrow celluloid band curved—about the size of a silver half-dollar, attached to a celluloid handle. With this instrument drawn across the tongue daily the hardened, fur-like mucus can be scraped from the tongue, thus greatly increasing the hygiene of the mouth. Floss silk or small rubber bands run between the surfaces of the teeth after eating also materially aids in lessening the chance of decay and oral sepsis.

The dentist is best prepared to prescribe a proper mouth-wash after testing the saliva; however, one simple and beneficial to the majority of mouths, which hardens the gums and cleanses the teeth, is none other than a two-per-cent. carbolic acid solution held in the mouth during the process of brushing.

In mouths where the saliva is acid, of course an alkaline mouth-wash is needed, such as a solution of milk of magnesia applied nightly. As a preventive of decay and an agent to harden diseased gum tissue, a ten-per-cent. solution of silver nitrate is unequalled. This, however, should be applied only by the dentist at intervals, as it temporarily stains the teeth and should be removed by him at a following visit with brushes and powders.

The main essentials are the mechanical and surgical removals of all deposits and diseased tissue, followed by astringent and antiseptic agents to heal the gum tissue, and the constant practice by the patient of daily mechanical friction with brush, powder and antiseptic washes. With these, general infection may be avoided and systemic diseases prevented.

COMPILATIONS

MISSING TEETH IN THEIR RELATION TO ORTHODONTIA AND BRIDGE-WORK.*

BY MILTON T. WATSON, D. D. S., DETROIT, MICHIGAN.

I shall call your attention, briefly, to the unfortunate conditions following the early loss of permanent teeth, and to the advantages and disadvantages encountered in their treatment.

The most conspicuous evil that results from missing teeth is, of course, the effect upon the occlusion. In this phase we find every thing from the simple spaces to the most pronounced irregularity, and associated with these conditions we have, often, disuse of the teeth on that particular side of the mouth where extraction has taken place, and with this lack of use there is usually a diseased condition of the gums. There is also an inferior masticating capacity and the digestive disturbances that follow it.

Another exceedingly important matter to consider in relation to these cases which has never received sufficient attention (in fact it is only within a comparatively recent period of time that it has received any consideration whatever), is the diminished size of the maxilla where teeth are lost through early extractions, and where they are missing through failure to develop. Where permanent teeth are extracted in early childhood, the most pronounced malocclusion usually results, often sufficient to cause distorted and unsightly facial lines. Extractions after 15 or 16 years of age probably do not affect the development of the maxilla itself, and if at all, only in the slightest degree.

By a study of cases of malocclusion resulting from premature extractions, we will usually find a diminished nasal development and capacity; and where the extraction is confined to one side of the mouth, the teeth on the other side all being present and well arranged, the evidence is so conclusive as to convince the most skeptical.

---

*Read before the Detroit Dental Society, March 8, 1906.

Should you talk with a rhinologist he would tell you that many times the little patients upon whom he has operated for post-nasal obstruction have not responded to the treatment as he would like to have them, and this is particularly true where the obstruction has been present for several years. It is becoming a recognized fact that children who have had a pronounced nasal obstruction for any considerable period of time show such a lack of development in their nasal passages that the removal of the pathologic tissues alone does not restore a normal breathing space, and rhinologists, as a matter of necessity, send their patients to the dentist to have the jaw enlarged to its normal size; and, by which means, they actually increase the nasal capacity. As soon as the nasal capacity is increased sufficiently so that the child can breathe entirely through the nose, then there is a development of these organs which is in harmony with the general development of the child.

Adenoid tissue usually disappears, of its own accord, between 12 and 16 years of age, but it leaves behind it a thickened tissue that is lifeless and functionless compared with the normal tissue, and this, too, in nasal passages that have never developed to a normal capacity.

It is impossible for the individual thus afflicted to receive a sufficient amount of air through the nose, and, strange as it may seem, it is said, by men who have given the subject the greatest amount of thought that the mouth-breather never gets sufficient air. Mouth-breathers do not breathe as deeply and completely as normal breathers; consequently, the oxygen in their blood is not equal to that of the normal breather. You have probably noticed that these anæmic individuals have also a lack of nervous equilibrium.

I have, perhaps, digressed somewhat from the subject, but I hope by so doing I have shown you how essential a well-arranged dental arch with the full complement of teeth is if we expect our patients to receive the benefits accruing from normal respiration. It will, of course, be clear to you that we should avoid diminishing the size of the dental arch by extracting teeth, and that we must weigh these conditions in considering the advisability of treatment where extractions have already taken place. Dentists are thinking about teeth constantly, and most of us are making the serious mistake of thinking so much about them, alone, that we are not looking deeply enough into other conditions that are vitally associated.

Let us now consider some of the difficulties encountered in the treatment of malocclusion resulting from missing teeth. If we consider opening spaces, thus restoring the arch to a normal size, we are at once confronted by the necessity for mutilating sound teeth in order to put in the bridge-work for restoration and retention, and the probable premature loss of the natural teeth used as abutments. I am not able to venture an opinion as to how much sooner such teeth will be lost, but it seems to be a generally accepted opinion, however, that a tooth which is compelled to do the work of two teeth will not continue to do so throughout as long a period of time as it would, should it have only the individual work that it was originally intended to do. With adults the conditions are a little different. The difficulty is transferred from the dentist to the orthodontist, for, in these cases, we often experience great difficulty in bringing about the desired change in the position of the teeth; and oftentimes we have experiences which tend to discourage us from doing as much of this work as we are asked to do.

The natural reluctance of adult patients to submit to orthodontic operations because of the unsightly appearance of the appliances is a matter that must be taken into consideration, and the long period of retention which must be undergone is discouraging to such patients.

Where we undertake such work with older people it is well to paint them rather a gloomy picture; for, unless they start out with a clear understanding of what is before them, such patients are liable to become the very bane of a man's existence.

In addition to these features, we must consider the various methods of restoring the lost teeth. It must be done securely and inconspicuously, and in such a way that it will be easy and practicable for the patient to keep the mouth in a cleanly condition. Teeth which are inserted to hold spaces, almost invariably have a double attachment. This is a point wherein some will differ with me, but you must remember that teeth which are moved a considerable distance after the development of the alveolar process is completed are in an entirely different class from those which have become firmly and naturally attached in a normal position.

and the tendency of such teeth to return to their mal-position is pronounced and continuous for a very long time. It is safer, therefore, especially in the lower jaws, to use a double attachment; otherwise the tooth anterior to the space is liable to be crowded inside or outside the line of the arch by the backward pressure of the teeth in front of the space, and every tooth anterior to it will be displaced, even around to the bicuspid region on the other side of the mouth.

Among the teeth most difficult to replace and retain are the upper and lower anterior teeth. An upper lateral can be carried on the cuspid if the bridge-work is delayed until the teeth are fimly fixed in their new position. The reason it is safer to swing this tooth from a single attachment than it is a lower is that they have not the influence of several teeth trying to displace them as would be the case in the lower, where both arches have been enlarged. It is probably true that a much longer period of usefulness would result if we should always use two attachments, and I believe that molar and bicuspid replacements will only rarely, if ever, be a success when suspended from a single attachment. Diminutive teeth are no longer a source of worry to us, for they can be fully replaced with an all-porcelain enamel jacket. It should be borne in mind that it is not always necessary, or even desirable with adult patients, to open spaces where teeth have been lost, for we can often close a space by carrying all teeth posterior to the space, forward of their natural occlusion, one cusp.

I have recently seen some of the removable bridge-work done by Dr. Peeso, of Philadelphia. It is the most beautiful gold work that I have ever seen, and the fact that the attachment is not so rigid as that of the shell crown is, to my mind, a great advantage, for it permits a slight movement which is normal in all teeth. I believe the longevity of teeth used for abutments, in this class of bridge-work should be much greater than where the attachment of the bridge is cemented securely.—*Dental Register.*

SUGGESTIONS

A METHOD OF TAKING THE BITE.

Frederick H. Berry, Milwaukee, Wis.

How many of us have constructed lower plates, which, after a day or so, would begin to chafe and cut along the lingual edge from cuspid to cuspid. And how many times you have had to grind the cusp off the molar teeth to keep the plate from working forward. The trouble has been that your patient in hand had extreme compressibility of the contents of the glenoid fossa and you had used a soft bite which did not compress it. Consequently your posterior teeth are just that much too long or high, and so drive the plate forward to the point of least compressibility.

It may be true that perhaps a larger proportion of the profession take a bite different from that which I am about to describe. I believe that this is due to being instructed differently in the beginning, and not from logic nor from the study of the principles involved. They simply do day after day that which was taught them in early years, and never give a thought to the truth, or perfection of the results.

In taking a pressure bite I use only one base plate, and that I prefer of a hard nature, such as Ideal base plate, metal or vulcanized rubber, where we make a combination plate.

The base plate is for the upper cast only.

On this plate we put a large roll of soft wax about as wide as you estimate the jaws will naturally be apart when in their normal relation to each other.

Place the base plate and roll of wax together in the patient's mouth, raise the chin up and head back, and instruct the patient to swallow. I have them repeat the act of swallowing two or three times at short intervals, but do not instruct them to bite. They will bite a little of their own accord.

As you read, try this experiment. Place your front teeth end and end together, look up at the ceiling directly over your head, and then try to swallow. Does not the act bring your lower jaw back to the natural position before you can swallow? It is rarely, if ever, I get an outer bite of the lower jaw by following this method.

To return to the bite: What have we so far? Nothing but one of those much condemned mash bites without any pressure because the wax was soft. This is the foundation on which to build the bite proper. We remove the base plate and wax in one piece from the patient's mouth and place it in cold water until it is hard throughout its entire thickness. We then, with a warm knife, trim away all the surplus wax, both lingual, labial and buccal surfaces, leaving only a slight imprint of the lower jaw. With this, which is only one piece to handle, and is hard and well fitted to the upper mouth, due to a good-fitting hard base plate, we now proceed to take the actual pressure of occlusion bite.

A very small roll of warm wax, not larger in diameter than a lead pencil, is placed around in the imprint of the lower jaw as it is seen on this first and now hardened wax bite. You notice that you still have only one piece to handle. We do not have to try and try again to hold the lower half of the bite in place while we are getting the upper half in place. All we need is to be sure that the base plate is in its proper position on the upper jaw. Hold it up by inserting the finger nails of your two index fingers into the hardened wax. With the head thrown back, instruct the patient to swallow, and just at the moment they do swallow, not before, tell them to bite hard and hold their teeth together tight, While in this position, we will mark on the wax the lip line, the medium line of the face, and the corners of the mouth. While doing this stand directly in front of the patient. Carefully remove the bite and base plate, which are now all one piece, place in cold water, and when cold trim away the surplus wax of last bite with a hot knife.

I can guarantee that 90 per cent. of all bites taken this way will not only be true occlusion bites, but true pressure bites as well. The first wax, after being cooled, acts as a stopper to bite against. We know that it presents an even surface to the lower jaw because it has a slight imprint from the first bite. In this last bite we have the condyles impacted into the cushion of the glenoid fossa to their limit, also the mucous membrane covering the jaws are compressed. Our occlusion in the resulting dentures will be of even bearing at the time of greatest bite or pressure of masticating. This feature is one of the secrets of success in making teeth that will masticate.—*Dentists' Magazine.*

REMOVABLE BRIDGE-WORK.

Dr. A. J. Sawyer, Manchester, N. H.

To make a removable bridge extending from a canine to a second molar, remove the pulp of the canine, fill the root-canal and enlarge it to receive a platinum tube of a size and length to correspond to that of the split pin. Swage or burnish a backing to the lingual and posterior surfaces of the canine. Make a hole in the backing opposite the hole in the tooth, insert the platinum tube, solder it to the backing, replace it on the tooth and burnish it to secure perfect adaptation. Remove and flow solder over the outer surface to give it the proper thickness, cement it on the tooth, and cut the outer end of the tube even with the backing. Another and smaller backing is burnished over this backing and a split pin of iridio-platinum is passed through it and into the tube in the tooth. The parts are then adjusted and the pin is soldered to the outer backing, thus forming the anterior anchorage for the bridge. Now, from a Melotte's metal cast, run into a plaster impression, swage of 22-k. gold plate, gauge No. 29 or 30, a saddle extending from one-sixteenth of an inch of the canine to one-sixteenth of an inch of the molar. The molar is crowned, and to this crown is attached one part of the Griswold attachment and to the saddle or bridge the other part, thus forming the posterior attachment of the bridge. Plain teeth are then adjusted to the saddle and backed with pure gold, soldered, finished, and returned to the cast. It is better not to set the crown on the molar until the bridge is completed. In this bridge no gold is in sight except that forming the molar crown.

To securely replace a broken facing without removing the bridge from the mouth, cut a slot from pinhole to pinhole in the backing and enlarge or countersink it on the lingual side. Take a suitable long-pin facing, bend the ends of the pins together and unite them with solder to form a staple. Place the facing on the backing, the staple in the slot, and fill the countersink with quick-setting amalgam.—*Dental Cosmos.*

THE USE OF THE RUBBER DAM IN SETTING BANDLESS CROWNS ON ANTERIOR TEETH.

Dr. J. S. Danforth, Sheboygan, Wis.

The method used consists in applying the rubber dam to the root to be crowned, with the aid of the Ivory labial clamp to hold the tissues well out of the way of the operator. The objects of this method are to force the gum tissue up so far that the joint between the root and the crown will be under the free margin of the gum when the clamp is removed, and when the gum has assumed its normal position; also to prevent lacerating the gum when preparing the root, and to expose to view all parts in the field of operation. The approximate bite should be noted before putting on the rubber dam, and on the six anterior teeth the entire operation can usually be completed before removing the dam. Only in cases of extremely close bite is it necessary to remove the rubber dam to grind the crown for the bite before cementing the crown to the root. In 90 per cent. of cases the first step in the operation should consist in placing the rubber dam and clamp into position, and the last, in their removal.

The cement can be trimmed much better if it is accomplished before removing the dam.—*Dental Cosmos.*

CROWNING A ROOT DECAYED BELOW THE GUM MARGIN.

Dr. W. A. Brownlee, Mount Forest, Ontario.

It was my purpose to show my method of crowning a root so decayed below the gum margin as to render impossible its restoration with a porcelain crown. When the root has been treated and tested for a length of time sufficient to assure the operator that it would be safe to complete the work, the apical foramen is sealed with very short gutta-percha points. Now, with a drill, the sides of which are parallel, straighten and enlarge the canal to about the size of No. 7 in Martin's screw plate, and with a small steel tap of that size cut a thread in the prepared canal.

For posts I prefer platinum, as it is tough and easily manipulated. Select a piece the required size and pass it through the screw plate, cutting a thread over its entire length. Dip the end in chloro-percha and screw it tightly into the canal already prepared, cutting it off an eighth of an inch below the margin of the gum. Proceed with each canal in the same manner. After the posts are all in place, fill the canals around their base with cement. Make a German-silver band the size of the root, place it in position over the posts, and retain it there by packing around it cotton saturated with Mills' cavity varnish. With a slow-setting amalgam pack the root around the screw-posts, filling the band also. Be careful to leave sufficient space between the amalgam and the occlusal surfaces of the opposing teeth to allow for the reinforced cusps on the shell crown. Dismiss the patient, and at a future sitting cut off the German-silver band and fit on a gold shell to suit the case.

The advantage I claim for this method is that the anchorage is not dependent on the weak part of the root, but is deep down in the canal, so that fracture of the root is next to impossible.

If the operator should desire to use a porcelain facing, allowance can be made for it while preparing the German-silver band and during the subsequent building up of the stub.—*Dental Cosmos.*

TIN FOR CHILDREN'S TEETH.

H. L. Ambler, Cleveland, O.

Many failures are made in filling the permanent teeth of children with cohesive gold, but if we try as faithfully with tin, good results will be produced, and as tin can be cut easier than gold, more margins, especially the cervical, would be finished smoothly. The physical properties of tin render it desirable as a filling material for children's teeth, and the objection some make that it is too soft and wears away, does not have any weight when used for fillings which do not include the incisal edge or occlusal surface, and even in the latter location improved tinfoil will wear twice as long as the ordinary. Tin possesses antiseptic properties which do not pertain to gold for arresting caries in imperfect teeth, and owing to its therapeutic quality, and being a rather poor conductor, there is a strong probability of calcification taking place under it; in fact, many clinical cases have shown that under tin there is often a deposit of lime salts from the contents of the dentinal tubuli; this is called progressive calcification.

In a very few cases tin does not discolor, but presents a grayish appearance, still in the majority of cases it is more or less blackened on the surface; in either case the tooth is preserved; this we know from positive clinical experience. If you fear that the inner side of the filling will discolor the tooth, then after preparing the cavity apply a coat of white varnish before inserting the tin. The surface of proximal fillings is more liable to discoloration than those in labial, lingual, buccal, or occlusal locations, because the latter are subject to the use of the brush, movements of the tongue, lips, cheeks and friction from mastication.—*Dentists' Magazine.*

TREATING AN ALVEOLAR ABSCESS.

Arthur D. Black, Chicago, Ill.

I believe it is a mistake to carry a tooth along through weeks and weeks of treatment through the pulp chamber, and many of us make a mistake in treating teeth too often. Whenever an abscess forms about a root it nearly always surrounds the apex of the root. It destroys the peridental membrane around the sides of the root, consequently treatment through the root canal does not get at what we want, and after pus has been present for some time, if the surface of the root has been bathed in pus for many weeks, we will get satisfactory results from treatment through the pulp chamber in very few cases. I do not practice immediate root filling in such cases, but I have done it more immediately than is the general custom. In such cases I prefer to fill the root canal, and, if necessary, make an opening through the alveolar process. —*Dental Review.*

TO PREPARE ALUMINUM PLATES FOR RUBBER.

L. P. Haskell, Chicago.

Do not spur them. The only way to successfully attach rubber to aluminum is by use of the loop punch sold by all dealers. Make one row near the margin, four loops on each side, and one row of eight on the ridge. Punch the loops after the case is ready for packing the rubber, for then it will not be necessary to fill the palatal openings with wax.—*Dental Review.*

BUBBLES IN PORCELAIN.

J. D. Patterson.

I believe the reason I do not have bubbles is that in mixing the body I spatulate it with a great deal of force, mix and incorporate it thoroughly, grinding it down with a strong spatula, and when it comes to settling the body, settling it vigorously in one direction. So many, when they have a crown or inlay will settle the body in one direction, then they will turn it over and unsettle it again, and rasp it up, change the original settling of that body until—why shouldn't there be bubbles?.—*Western Dental Journal.*

SCRAPING THE CAST FOR VULCANITE PLATE.

E. M. Kittig, Louisville, Ky.

As a rule, the posterior limit line of a plate should be farther back than we find most of them, especially in flat-arched mouths; and should be thinned and beveled so as not to form a sudden offset between the ending of the plate and the soft palate.

The plaster cast should be scraped at the distal margin to permit the plate to imbed itself into the soft tissues of the palate. The plaster cast should also be slightly altered on the buccal and labial walls so that the rim of the plate will hug the tissues closer at these points. Just midway between the occlusal surface of the alveolar ridge and where the soft tissue loses itself in the body of the bone it permits of some compressibility without irritation. Plates constructed along these lines should have firm stability in the mouth. —*Dentists' Magazine.*

VACUUM CHAMBERS.

E. M. Kettig.

Vacuum chambers rarely do any good, no matter how formed, and often work a positive harm to the stability of the plate and the tissues of the mouth. Especially does this hold good where the central raphæ is prominent and bony, and the mucous covering attenuated and stretched.—*Dentists' Magazine.*

USE CARE IN PLACING CLAMPS OR LIGATURES.

In the application of the clamp or ligature care should be taken to have the gums anæsthetized by bathing them for a few minutes with a solution of cocain adnephrin and water. The clamps should be selected to fit tooth without undue pressure on gums.

Ligatures should be dispensed with as far as possible. When used they should only be carried high enough to give access to cavity and keep out moisture. The careless use of ligature and clamp have done much injury as well as caused suffering.—W. G. E., in *Dentists' Magazine.*

CLASPS FOR PARTIAL LOWER DENTURES.

L. P. Haskell.

The best clasp for this work is made of wire. Using 18-gauge gold wire, an inch and three-quarters long, doubled with the pliers, not quite close together. Fit it to the labial surface and side, then bending the ends at right angles, to be imbedded in the rubber.—*Dentists' Magazine.*

PROTECTING PORCELAIN SURFACES FOR SOLDER WORK.

Henry C. Lee, Chicago, Ill.

If porcelain surfaces in bridge-work are coated with sandarac varnish before investing, and care is taken to have the investment thoroughly heated before beginning soldering, it will result in little or no cracking or checking of the porcelain.—*Dental Review.*

TO POLISH PLATES.

E. T. Evans, Decatur, Ill.

Use powdered pumice stone moistened with "Johnson's Ethereal Soap" (Parke, Davis & Co.), employing either felt cones or brush wheel. It is cleaner than when water is used to moisten the pumice and will save time.—*Dental Review.*

SETTING A DAVIS CROWN PIN.

J. B. Merrick, Kansas City, Kas.

Prepare the crown and pin in the usual manner; fill the socket in the crown with powdered sulphur; pass the crown through an alcohol flame until the powder liquifies; insert the pin and hold it in place until cool.

Pins fastened into crowns in the above manner cannot be removed without breaking the crown. This method is good in setting pinless teeth in bridge-work on all removable tooth bridges.—*Dental Review.*

USING ALCOHOL IN DESICCATING CAVITY.

In using alcohol to dry out sensitive cavities it is well to carry the pledget of cotton through the flame of a lamp, permitting the alcohol to burn for a second. Then blow out the flame and apply to cavity. Immediately follow with a dry pledget of cotton to absorb excess and prevent too rapid evaporation.—W. G. E., in *Dentists' Magazine.*

TO KEEP HYPODERMIC NEEDLES FROM RUSTING.

C. E. Conley, La Sueur, Minn.

Simply dry the needle out with blasts of hot air from the chip blower. Throw away the little wires and you will be surprised how long your needle will last.—*Dental Review.*

PARTIAL LOWER IMPRESSIONS.

L. P. Haskell.

It is necessary to have as little plaster as possible on the outside with greatest bulk on the inside of the teeth, so in removal the impression may be forced back into the mouth, thus preserving the integrity of the really important feature.—*Dentists' Magazine.*

HOW TO IMPROVE YOUR CROWN AND BRIDGE ARTICULATOR.

A. F. Donahower.

The ordinary crown and bridge articulators now on the market have but one movement, namely, vertical. By the use of the mechanical saw and a few minutes of your spare time, enlarge the hole for the pin backwards say one-quarter of an inch, making a slit for the pin to slide back and forth. Do the same on both sides, but only in the one piece (lower), and fasten a small rubber band to each end of the pin, allowing it to pass around in front. This elastic band will keep the articulator in a given position when at rest, but can easily be moved to give any desired position, vertical, lateral and antero-posterior movements, which correspond to the movement of the jaws. This simple method will save the trouble and time of making the plaster articulator and is much better. — *Dental Brief.*

DRAINAGE OF ABSCESSES.

G. V. Black.

There is no place in the human body where care in securing beyond question the complete drainage of abscesses is so important as in the mucous tissues of the mouth. The blood supply is so rich in this region that cuts close in a surprisingly short time and the formation of pus is often profuse and rapid. Hence we must insist upon the necessity of keeping up the drainage for a sufficient time for the complete cleaning of the abscess. In all cases of the drainage of abscesses in the membranes of the mouth I insist on the use of 95 per cent. carbolic acid in the tent. A very small amount retained in the gauze or cotton is sufficient to cauterize the lips of the incision, making the opening freer, promoting the egress of pus and presenting a barrier to the ingress of new infective material. — *Northwestern Dental Journal.*

SELECTING A CROWN.

P. P. Dove.

In matching all porcelain crowns, such as the Logan, Justi, etc., the shade can be determined more accurately by examining both crown and natural teeth from the lingual aspect with the mouth mirror, while holding the crown in position in the mouth. In some cases a crown may seem to be a perfect match while looking at it from the labial side only, when, upon examination from the lingual side, there will be disclosed a distinct difference in shade. A crown should be selected having for its foundation-body, material of the same shade as the underlying colors in all angles of light, but will match more closely after a few years of service, when the natural teeth gradually assume a darker shade. — *Dental Brief.*

FUSING PORCELAIN.

J. Q. Byram, Indianapolis.

The following deductions are from experiments:

1. That porcelain has no definite fusing point.

2. By prolonging the time of exposure to heat a thoroughly fused porcelain may be obtained at a comparatively low temperature.

3. That porcelains fused at a lower temperature for a long time will maintain their characteristic color.

4. That low-fusing porcelains can be made of high-fusing porcelains by repeated fusing and grinding.

5. If a piece of porcelain is thoroughly fused and more porcelain added and fused, the first layer will be slightly over-fused.

6. That porcelains containing a large percentage of flux are affected more by bubbles than those that are more nearly composed of the basal ingredients.— *Dental Review.*

TO PREVENT PAIN IN LIGATING RUBBER DAM.

Bathe the gums around the teeth to be enclosed in the rubber with a solution of cocain and adrenalin or adnephin for a few minutes, prior to placing the rubber, and the patient will be very thankful for the relief afforded. I usually take 5 to 10 crystals of cocain and 5 to 10 min. of adnephin and twice the amount of water in making my solution for this preparation. The strength of the solution, however, is immaterial. — *Dentists' Magazine.*

OBITUARY

DR. JOHN S. BOAK.

Dr. John S. Boak, for many years a leading dentist of Martinsburg, W. Va., died October 3, 1906, of paralysis. Dr. Boak was a son of the late William Lee Boak, a native of Berkeley county and direct descendant of the Lee family of Virginia. His father was a distinguished resident of this county for many years, having been a member of the state legislature and the Berkeley county court. Dr. Boak was born in this county in 1839, and was 67 years of age. At the outbreak of the civil war he enlisted in the confederate army as corporal of an artillery company, later known as the Jackson horse artillery. He was promoted to orderly sergeant in 1862, and was commissioned a lieutenant in 1863. He served throughout the war, finally being paroled at Charleston. Among the numerous engagements in which he participated were Gettysburg, New Market, Winchester, Fisher's Hill, and Liberty Mills. He was wounded six times during the latter battle. He was captured at the battle of Fort Donaldson, and held a prisoner by the union forces for eight months, being exchanged at Vicksburg, at battery of Newmarket, planted the first battery in position, and directed the firing of same. He was one of the four brothers who served in the confederate army.

After the close of the war, Dr. Boak began the practice of dentistry, after a course at Old Baltimore College of Dental Surgery, and has practiced his profession in this city until a few months ago. In 1873 he married Miss Kate A. Davis, of Maryland, who survives.

Dr. Boak was a prominent secret order man, and was a member of Equality lodge of Masons, the Fraternal Mystic Circle, the Knights of Honor, and the Royal Arcanum. For two years he held the position of worshipful master of Equality lodge of Masons, and at the time of his death was a trustee of the Royal Arcanum and a prominent and influential member of the Mystic Circle and Knights of Honor He was a consistent member of Christ Reformed church, and took a leading part in the advancement and work of that denomination in this city, and for many years was superintendent of the Sunday school.

Surviving are his widow and the following children: Dr. S. D. Boak, of the United States army; William Lee Boak, of Goldfield, Nev.; Mrs. R. D. Sefton, of Waynesboro; Mrs. R. H. Stewart, of Martinsburg; Miss Madeline and Master Cedric and Donald Boak, at home.

REGULAR CONTRIBUTIONS

THE BEAUMAN ANCHORED DENTURE.

BY EDWARD C. MILLS, D. D. S., COLUMBUS, OHIO.

In the November SUMMARY, Dr. J. B. Beauman has introduced to the profession an anchor for a denture, which is destined to play an important part in solving many of the difficult propositions that have heretofore confronted the practitioner in the prosthetic branch of our profession.

The permanence and durability of the teeth to which an anchorage is attached is the paramount issue, and unless constructed on scientific and physiological principles, elements too often lost sight of, the results of our efforts fall far short of our expectations.

While this anchorage has a wide range of usefulness, it is especially adapted to full lower dentures. Many patients present themselves wearing a full upper denture, and having a few of their anterior lower teeth remaining and are loath to part with them, knowing the inconveniences usually incident to wearing a lower plate, and we hesitate in advising their extraction, knowing it would be carrying coals to Newcastle to substitute a plate that, for proper mastication, would probably be equally inadequate. Dr. Beauman's contribution to dentistry obviates these difficulties, and these cases can be taken with such a degree of confidence that we will win their gratitude, as expressed by one of his patients in his article.

A typical case is where the lower cuspids and second bicuspids remain, and their roots and surrounding tissues are in healthy condition. Typical cases, however, seldom present themselves in dentistry—rather the reverse; still the principle of attachment is applicable, whether we have the four teeth, or are confined to two, or even one.

Apropos to considering the advantages of this anchorage, a

The editor and publishers are not responsible for the views expressed by authors in the reading matter published by THE DENTAL SUMMARY.

brief outline of its construction may not be out of place; for a more detailed description, however, I would refer the reader to Dr. Beauman's article.

After selecting the teeth or tooth that is to serve as an anchorage, extract all the remaining teeth and roots (*Fig. 1*); if necessary a temporary plate can be constructed for service during the process of absorption. When the conditions are favorable for a permanent anchored denture, prepare the root as for a Richmond crown.

While excision of the crown and immediate extirpation of the pulp has its advocates and advantages in some cases, in an operation where the entire success depends upon four, two, or even one root, to obviate any possibility of jarring the root and socket, or chancing a fracture of either, devitalization by arsenious acid, though not so expedient, seems freer from any contingencies.

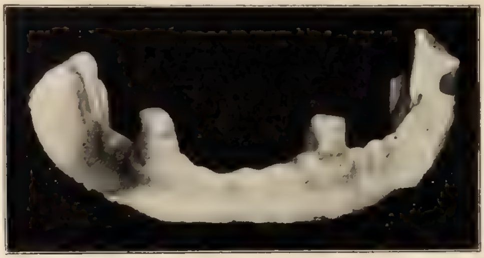


Fig. 1

Make the cap of No. 30 platinum plate, using iridio-platinum wire for the pin; place caps and pins in position in the mouth, take a plaster impression. If the caps and pins do not come out in the impression, place them carefully in their respective positions in the impression, and pour cast, composed of marble dust and plaster, equal parts. If the typical number of teeth are used with a square iridio-platinum bar, bent so as to conform to and rest upon cast between the caps, ends extending upon the tops of same, then the entire frame-work is soldered together.

If but two roots are used, the cuspids, for instance, connect by bar, as in *Fig. 2*.

If but one root, from two short bars, conformed close to cast, one extending mesially, the other distally, as in *Fig. 4*.

In case of two roots some distance apart, do not connect with bars; construct as in *Fig. 4,* being careful that they stand parallel to each other, to prevent any difficulty in introducing the denture when completed.

The framework completed, it is placed on the roots (*Fig. 2* and *4*); the bar should be in close proximity, in fact against the gum. A plaster impression is now taken, the framework placed in position in same, a plaster cast prepared, and then proceed to wax up the case in usual manner. After investing, cover cast and anchorage with No. 40 tinfoil, and pack the case as usual. When vulcanized, remove framework with a pair of pliers; by careful manipulation it is easily accomplished. Place framework in posi-

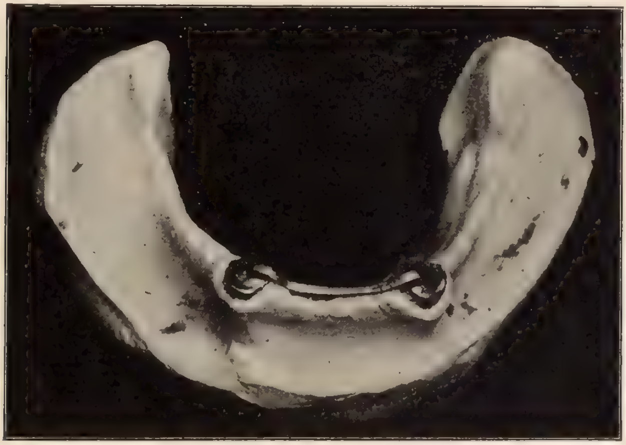


Fig. 2

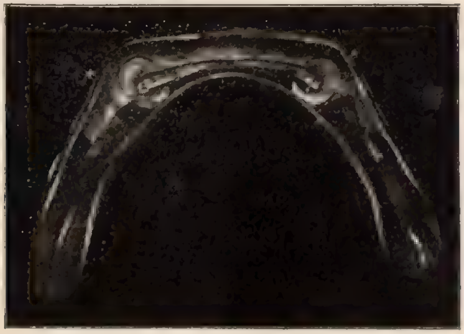


Fig .3

tion in mouth, adjust the denture to see that adaptation to anchorage and gums is perfect, then remove all; cement the anchorage to roots, hastily remove any surplus cement, and place plate in position; do not attempt to remove it until the cement is perfectly set. When you do remove it, if attention has been given to details, you will have the *ne plus ultra* of attachment, the under surface of plate having receptacle for bar and caps, as in *Figs. 3* and 5, telescopes the latter on the same principle as a movable bridge does its abutments.

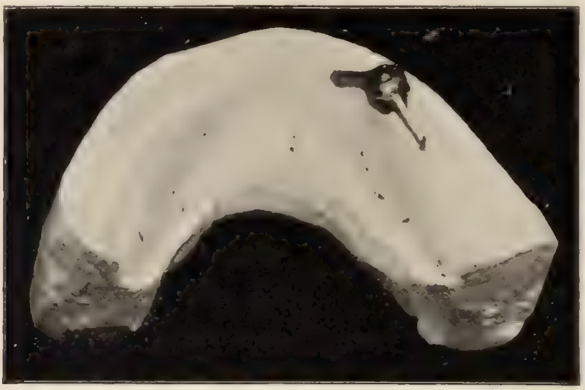


Fig. 4

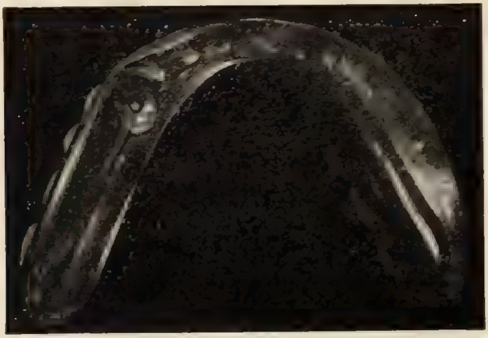


Fig. 5

The retention of the denture in position is due to the friction of the caps and bar in the rubber, and also to atmospheric pressure While the former may vary somewhat owing to a slight divergence from vertically parallel surfaces, the latter can be approximately computed; assuming the area of cap to be .049 square inches, the atmospheric pressure would be .735, or practically $\frac{3}{4}$ pounds; the same principle applies to the bar. Another feature of some import is, that little or no absorption of process or adjacent tissues takes place around the roots or root that has been utilized, thus leaving a firm prominence which heretofore has been the only salvation when a full lower plate was worn. While the pressure is equally distributed over the surfaces of gum and anchorage, a minimum amount comes upon the latter. Presuming, however, that considerable pressure did fall upon it, there would be little consequence as far as the durability of the roots is concerned. A series of experiments carried on since 1894 by Dr. G. V. Black show the amount of pressure or resistance of natural teeth during mastication to vary from a little below 75 to 275 pounds—taking good, bad and all together, averaging about 170 pounds, the variation seeming due mostly to the condition of the peridental membrane rather than to the condition of muscular strength, as they put on as much stress as the peridental membrane will sustain without inducing pain. Many whose gums were quite a little inflamed from deposits of calculus, which recovered completely after treatment, their power of bite being 40 pounds, they were strictly advised to use their teeth very vigorously in mastication, and their bite rapidly run up to 170, and even 200 pounds, illustrating very forcibly the development in strength of tissue when stimulated to perform their natural function.

It must follow, from the above experiments, that the downward pressure upon the abutments, through the enforced service, would certainly enhance their usefulness.

Experiments show that with a plate of artificial teeth it is never possible to produce the amount of force that is obtained with the natural teeth, the stress being something like 50 pounds; this would be increased somewhat in a typical case with anchorage, but not to an extent that would be other than beneficial to the peridental membranes.

The most potent factor to be considered in forming an anchorage is the lateral pressure or leverage, whether it be a clasp attachment to retain a plate or a cap or band for abutment of a bridge; this force is the one most fatal to the stability of a tooth, and is in direct ratio to the proportion of tooth above the gum. See diagram, *Figs. 6* and *7*.

In the fifth edition of Dr. G. V. Black's Dental Anatomy, tables are given showing the results of measurements of many teeth of each denomination—a sufficient number of each to insure reasonable accuracy as to average size. To illustrate the leverage or lateral pressure, we will select the lower cuspid, the average length of which is given as 25.6 millimeters, or 1.01 inches.

Length of crown, .40 and of root, .60.

The resistance required to loosen a tooth in the socket varies: no instrument has been devised or accurate experiments made to calculate what would be the average resistance of a tooth, but for convenience of illustration we will place it at 90 pounds. Using one of the principles of dynamics, the lever, assume the fulcrum to be a point at the union of crown and root, the power arm from this point to apex of cusp, the weight arm from fulcrum to apex of root, the weight or resistance of root, 90 pounds, and the power or lateral pressure by X. Apply one of the laws of the lever in the following proportions:

Fig. 6
A. B.—Power arm .40
B.—Fulcrum
B. C.—Weight arm .60
R. R.—Resistance 90 lbs.

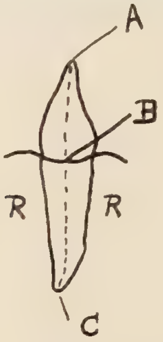


Fig. 6

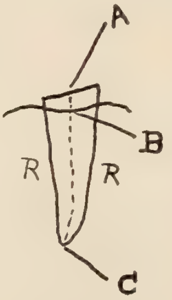


Fig 7

Fig. 7
A. B.—Power Arm .10
B.—Fulcrum
B. C.—Weight arm .60
R. R.—Resistance 90 lbs.

Power Arm : Weight :: Weight Arm : Power.

By substitution we have the following:

.40 : 90 :: .60 : X, hence 54=X. 4, .: X=135,

Or 135 pounds pressure to displace the resistance, when the crown is of average length (*Fig. 6*).

After preparing the tooth for abutment as advocated for this anchorage, the crown, or power arm, is considerably diminished in length, say to .10 (*Fig. 7*); then our proportion is as follows:

.10 : 90 :: .60 : X., hence 54=X.1 .: X=540 pounds,

Or 540 pounds pressure to displace same resistance that 135 pounds would do with crown its normal length. While these figures seem incredible, they prove conclusively that a tooth prepared in this manner is infinitely better fortified against the usual stress of mastication.

A practical illustration is the increased difficulty by which a tooth is removed when the crown has been broken off near the gingival line.

In partial dentures, the utility of this anchor should not be overlooked. In those cases where the upper or lower anterior teeth remain, and it is not desirable to remove them, attachment can be made to any firm root; if none is available the distal tooth on either side can be used, forming the anchor as in *Fig. 4*, dispensing with the mesial bar. The superiority of this method over the usual clasp attachment is proved in several ways. Avoiding the deleterious effects of the clasp upon the tooth structure, the firm position in which the plate is held, thus avoiding any friction on adjacent teeth, etc.

Fig. 1 represents a case where the two lower cuspids were used as abutments; *Fig. 2* shows the same after roots have been prepared with anchor in position; *Fig. 3*, the finished denture, on underside of which is shown the receptacle for the anchorage. This case was finished and patient dismissed September 15, 1906. To show the satisfactory results of this method, it may be interesting to know that the first visit to my office since that date was at my request, October 22nd, to have cast made to illustrate this article.

Fig. 4 illustrates a full lower denture anchored to one tooth, the first lower right bicuspid. Patient, a man aged 70 years, had worn partial plate extending from lower left cuspid to the former tooth for eight years. No teeth had been distal to these for some 20 years. On loss of the cuspid it became necessary that a full denture be made. The remaining tooth was prepared for the anchor, and the cap with two short bars attached, as in *Fig. 4*. When the plate was introduced, with such difficulty was it removed that it was necessary to trim the rubber at edge of groove. A full upper denture was made at the same time, with the usual form of suction.

This case was made June 21st, and at this writing the root has not shown the least tendency to loosen, the gums seem firm, and the patient has given the plate the severest test, and experienced no discomfort—something unusual, considering that no posterior teeth had been in the mouth for so long a time, and the absorption had advanced to the extent usual in such cases. *Fig. 4* indistinctly shows the small amount of absorption that takes place when the root is allowed to remain, and the surrounding tissues are in a healthy state. An anchor for a lower denture has long been sought, and if I shall have aroused sufficient interest to encourage others to test this method I shall have accomplished my purpose in preparing this article.

CAVITY PREPARATION FOR METALLIC FILLINGS*.

BY C. E. WOODBURY, D. D. S., COUNCIL BLUFFS, IOWA.

I do not want to claim any originality in the fundamental principles of what I am to present to you today. These principles were worked out years ago by Drs. Varney, Webb and others, and about fifteen years ago were systematized and presented to the profession in concrete form by Dr. G. V. Black, who took the best that was already before the profession, added to it his own ideas, and made a definite method of procedure; the mechanical principles of which were correct and the other ideas based upon the result of long pathological and microscopical observations.

It would be impossible to give you a complete system of cavity preparation in the time that I have at my disposal, but I desire to point out some of the most important principles and the reason for their use.

There are seven points to which I wish to call your especial attention:

First: Restore the tooth or teeth to be operated on to their normal position and occlusion, so that when the filling is made a normal inter-proximal space and contact point will exist.

In nearly all cases that present themselves to us in which the decay is at all extensive on the proximal surfaces, there has been a dropping together of the crowns of the teeth on account of their tendency to lean against each other for support, crowding the gums out of the space and injuring the gum and the peridental membrane by the packing of food and other debris against them.

---

*Read before the Nebraska State Dental Society, 1906.

Figs. 1, 2, 3 and *4* show this condition and the imperfect and incorrect operations which result from the lack of restoration of this space. *Fig 1* shows the dropping together of the crowns of the teeth; *Figs. 2, 3* and *4* showing improperly made fillings with their results, recurrence of decay appearing around the filling and the proximating tooth.

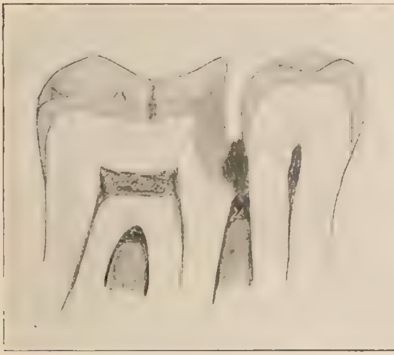


Fig. 1

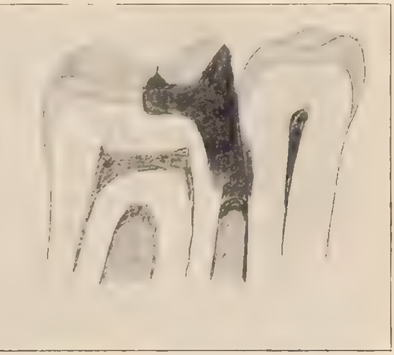


Fig. 2

This space should be restored by separating either with separators or packing the cavities with cotton, gutta-percha or other substances. It sometimes requires months to regain this lost space, but permanent operations and healthy soft tissues can never be brought about and maintained unless this is done.

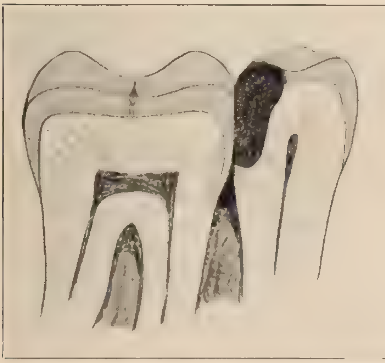


Fig. 3

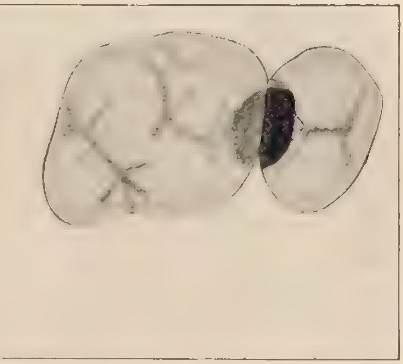


Fig. 4

If the contact point is properly made the gum will fill the interproximal space, and by keeping out foreign matter protect the peridental membrane from injury and the proximal surfaces of the teeth from recurrence of decay (*Figs. 5* and *6*).

I consider this restoration of the inter-proximal space and contact point one of the most important steps in the whole procedure and one that should never be overlooked nor neglected.

Second: Remove all enamel rods that are not supported by dentine.

We all know that the strength of the tooth is in the dentine and that the enamel is simply an armor to protect it from wear and decay. This enamel is made up of a system of rods, the general direction of which is at right angles to the dentine upon which it rests. These rods are cemented together by a bond which has much less resistance to stress and slightly less resistance to chemical dissolution than the rods themselves. We find these rods in two conditions, namely: Straight rods lying in straight rows, which are easily split apart, much like a straight-grained pine stick, and irregular and twisted rods, lying in irregular rows, very hard to cut or split, more like a knot. There seems to be a general idea that there is a difference in the density of the enamel in different teeth. This, however, is erroneous, the apparent hardness being due to the interlacing of the enamel rods, making them more difficult to cut with instruments but no more resistant to decay. The rods lying in the gingival and middle thirds of a tooth are almost always in direct line with the short axis of the tooth. As they approach the occlusal and incisal portions of the tooth they diverge from this line until at the top of the cusps in the molar and the incisal surface of the anterior teeth they are in line with the

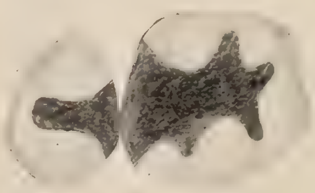


Fig. 5

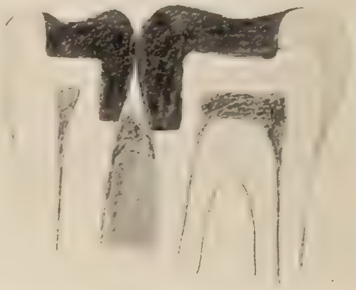


Fig. 6

long axis of the tooth. In the molars rounding over the cusp they again diverge until the development groove is reached. Thus you will see that a cavo surface margin in the occlusal or incisal third of any of the axial surfaces would require a much longer bevel than a margin on an occlusal surface or in the gingival or middle third, in order that no enamel rods will be left with their dentinal ends cut off and short peripheral ends left unsupported (*Fig, 2, 3* and *7*). If they are not displaced by the plugger they are sure to be broken down during mastication, if they are on an occluding or incisal surface. It is occasionally necessary, for esthetic reasons, to leave enamel on the labial surfaces of the incisors which under other conditions would be cut away, the danger of fracture in this location being from the use of the plugger, as no masticatory force can reach it at this point, This enamel should be protected by cement, and great care used in the malleting. When the margin approaches very close to the occlusal or incisal end of a tooth, on the proximal surface, the bevel must be so long as to leave a thin friable edge of filling material and to contraindicate its use, necessitating cutting away the tooth to a position where the rods assume a more perpendicular character. The mesio-lingual and disto-lingual ridges in the incisors must also be cut away when approached by decay on account of the inclination of the rods at these points. In preparing a cavity the direction and depth of the bevel must be very largely determined by the sense of touch, an experienced operator being able to tell by the feel of the enamel under the chisel what its direction and character is. A close study of the arrangement of the enamel rods and their characteristics and the lines of cleavage will save many fillings that otherwise would have been failures.

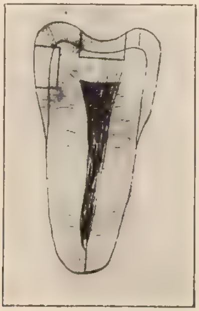


Fig. 7

Third: Extend all cavity margins to smooth surfaces.

This is done so that fillings may be well polished at the margins and left in such condition that food particles will not lodge on the margins and cause recurrence of decay. This rule is particularly applicable to pit and fissure cavities.

Fourth: Extend gingival margins under the free margin of the gum and all other margins to smooth surfaces in such a position that they will be kept clean by the excursions of food and the action of the lips, cheeks and tongue.

This is what is called extension for prevention and concerning which there is probably more discussion than any other one subject relating to cavity preparation. Dr. C. N. Johnson very nicely gives the reasons for this extension which I quote: Observant operators have noticed that there are certain points around ordinary proximal fillings where decay is most likely to recur. This relates to the labio-gingival, linguo-gingival and the occlusal and incisal angles. The reason for this is found in the fact that these regions are not kept clean by the friction of food in mastication, or by the lips or tongue in their various movements. If the anatomical relation of the proximal surfaces of these teeth is studied, it will be seen that a considerable area in the vicinity of the contact point is not cleansed by natural processes. This is what admits of caries in this region in the first instance. If in preparation of a cavity we limit the area to a small, round outline, we have left unprotected at the points indicated more or less of the surface of enamel which is still subject to decay. With the same condition present and the same influences at work which originally induced decay, there is little to prevent recurrence. The remedy lies in so extending the outlines of the cavity that the margins are carried to a point where they will be kept clean. The gingival margin of the proximal filling has often been alluded to as the "vulnerable point," even when fillings were well inserted, but this is hardly in strict accordance with facts. In reality, decay seldom recurs along the gingival margin proper. It usually begins at the labio-gingival or buccal and the linguo-gingival angles. From here it may extend and involve the entire gingival margin, but the initial point of failure is usually at the angles. This is because there is a lodgment place in these positions for deleterious matter to form undisturbed by friction from the tongue or lips and unprotected by gum-tissue. In this small sheltered harbor microorganisms of caries produce their acid and attack enamel. No tooth may be considered safe from recurrence of decay around proximal fillings unless the gingival wall has been carried sufficiently rootwise to bring that portion of the filling under the gum, and the gingivo-labial and the gingivo-lingual angles have been extended to a point where these margins of the fillings are kept clean by friction.

The best argument that the opponents of this system seem able to bring up is that they do not believe in sacrificing good tooth structure because there may be at some time recurrence of decay around a filling. This seems to me a very poor argument, because the decay is sure to recur as long as there is a condition of susceptibility in that mouth, if the extension is not made. Even the most enthusiastic advocates for extension for prevention have never advised its use in old people or others who have reached a condition of permanent immunity.

Fifth: The cavo-surface angle should be beveled from one-fifth to two-thirds the thickness of enamel, depending upon the location of the cavity wall and condition and direction of the enamel rods.

This should be a true bevel, "never a rounded surface," and can generally best be made with a sharp chisel. The reason for this bevel is to take the strain off from those enamel rods lying nearest the filling and to make oblique angles which are not easily chipped, either by the plugger or in mastication and to cut away all enamel rods, the dentinal ends of which have been destroyed either by cutting or decay.

All the cavity margins in the anterior teeth should be made in long, graceful curves for the esthetic effect and should be carried far enough to the labial surface so that the gold will be plainly visible. If we see only the edge of a filling it has a very dark appearance and looks more like a decayed spot or an amalgam filling than a gold filling.

Sixth: Make the resistance and the retentive form so that the greatest retention is at the point of stress.

Aside from the desirability of removing the occlusal margins beyond the point of stress so as to avoid chipping or danger of displacing fillings by having stress on the margin during mastication, they should be well seated and well anchored in the occlusal or incisal on account of the better resistance form that may be obtained and also to take full advantage of the law of levers.

This law, as stated in proportion, is: Power is to resistance as the resistance arm is to the power arm. Let us consider the filling a lever, the fulcrum is the gingival seat, the power is the force of mastication, the resistance is that which holds the filling in place. If we anchor the filling in the occlusal or incisal at the point of stress the amount of resistance form need only be of equal strength to the force liable to be brought to bear upon the occlusal part of the filling. The equation would be thus (*Fig. 8*):

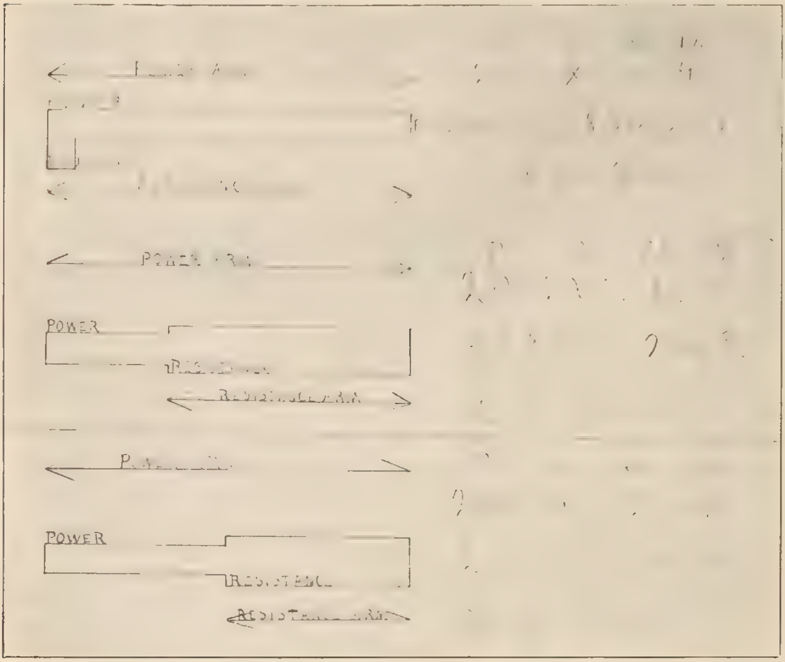


Fig. 8

P R RA PA
200 : X :: 4 : 4—X equals 200

If the filling is anchored in the lingual and buccal walls in the gingival half of the tooth the equation would be 200:X::2:4—X equals 400, showing that it requires twice as much resistance form to retain the filling as when the anchorage is at the point of stress.

In most cases it is impossible to secure this resistance form in the buccal and lingual walls because there is not sufficient width of wall mesio-distally, and should the dentine be deeply grooved in these walls it will so weaken them that under stress of mastication the leverage employed will break them down and cause the early loss of the filling. It is only in exceptional cases, where the direction of the occlusion is favorable and the lingual and buccal walls of unusual strength, that it is good practice to use them for resistance and retentive form.

Seventh: The interior of all cavities should be made with flat seats and square, definite angles.

This is on the principle that a square pin in a square hole is more secure than a round pin in a round hole. With this square formation the filling is more easily made, there being no tendency to rock and more secure after it is made, there being no tendency to tip or slide out of the cavity under the stress of mastication. These seats should be either at right angles or parallel to the long axis of the tooth. All walls that are not parallel to each other should be as nearly as possible at right angles to each other, thus making the retentive form adequate with very little undercutting.

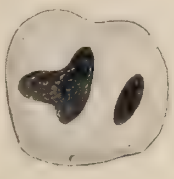
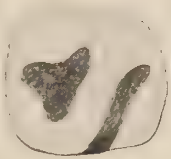


Fig. 9



Fig, 10

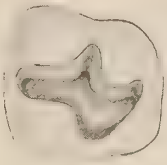


Fig. 11

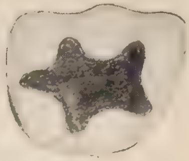


Fig. 12

With these general propositions in view, let us look rather hurriedly into the technic of some of the different cavity preparations.

TECHNIC OF CAVITY PREPARATION.

Pit and fissure cavities are usually caused by structural defects in the enamel. They are prepared by cutting out the entire length of the fissure, leaving the margins in sound, smooth enamel, the pulpal floor flat, the axial-walls at right angles to the floor and very slightly undercut with an inverted cone bur, the enamel walls slightly beveled. (Figs. 9, 10, 11, 12, 13, 14 and 15)

Labial and buccal cavities are on smooth, accessible surfaces and are generally caused by unclean condition of the teeth. If these cavities occur near the gum, the gingival margin should be carried under the free margin of the gum and the other margins extended so as to include all partially decalcified enamel. The floor should be flat, the side walls at right angles to it, slightly undercut and the enamel margins slightly beveled. (Figs. 16, 17, 18 and 19).

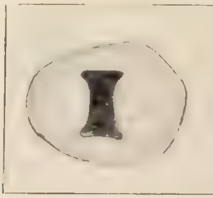


Fig. 13

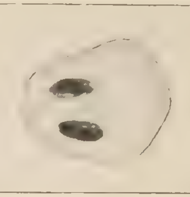


Fig. 14

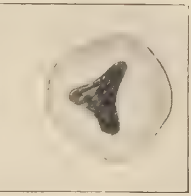


Fig. 15

Proximal cavities in the anterior teeth, not including the incisal angle. The gingival wall should be extended rootwise well under the margin of the gum. The lingual and incisal walls should be extended so as to include the contact joint in the cavity and to sound enamel supported by the dentine, the mesio-lingual or disto-lingual ridge of enamel entirely cut away. The labial wall

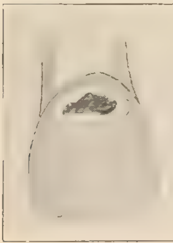


Fig. 16

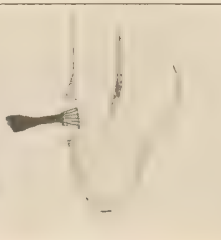


Fig. 17

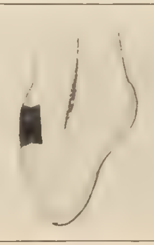


Fig. 18

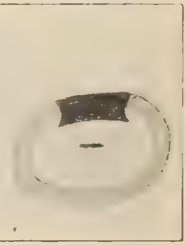


Fig. 19

should be extended so that the filling should be distinctly visible. See Fig. 20. The gingival wall should be flat and at right angles to the pulpal wall, the labial and lingual walls should be slightly undercut at the axio-labio-gingival and axio-linguo-gingival angles with an inverted cone bur which should also be used in making the incisal anchorage. See Fig. 21. These undercuts should not be deep as there is, after the fillings are finished, very little stress brought to bear upon them. The cavo surface angle should be deeply beveled in the incisal portion.

Fillings in the anterior teeth including the incisal angle.

These are in my estimation the most difficult fillings we have to make and retain.

The gingival wall should be flat and carried under the margin of the gum. The labial and lingual walls should be in sound enamel well supported by dentine. The axio-labio-gingival and axio-linguo-gingival angles should be lightly undercut with an inverted cone bur enough for convenience in starting the filling and to prevent the filling from being dislodged towards the incisal by sticky foods, candy etc. The main resistance form should be in the incisal portion of the tooth and is usually in the form of a step extending from the cavity across the incisal end of the tooth to the second developmental groove. Figs. 22 and 23.

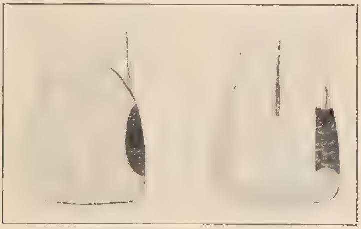


Fig. 20 Fig. 21

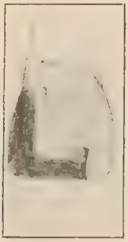


Fig. 22

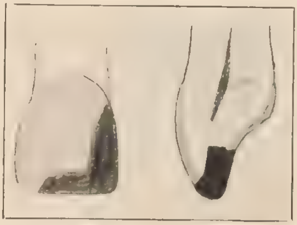


Fig. 23 Fig. 24

If the tooth is very thin at the incisal end both the labial and lingual plates of enamel should be cut away until the dentine is reached. A square shallow groove should be made in this dentine with a depression at the end also square in shape, with a slight undercut at its farthest point. Fig. 22. If the tooth is of normal thickness or more at the end incisal the labial plate of enamel may be left and the lingual plate and half the dentine cut away to make the step. Figs 24, 25 and 26 The incisal end of the labial plate of enamel should be beveled and the gold brought completely over it to protect it. Another form of anchorage which may often be used to advantage but which is not so strong on account of the additional leverage, is to cut a dovetail through the lingual plate of enamel and into the dentine at a point as near the incisal end of the tooth as possible and still be in strong dentine. Fig. 27.

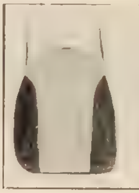


Fig. 25

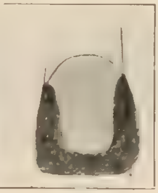


Fig. 26

In these cavities incisal anchorage should never be made by cutting a pit in the dentine between the labial and lingual plates of enamel as the anchorage so made must necessarily be slight. It weakens the incisal end of the tooth by taking away the supporting dentine and brings the joint between the tooth and filling where the leverage employed has the greatest tendency to dislodge the filling. Fig. 28.

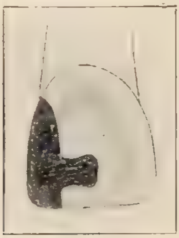


Fig. 27

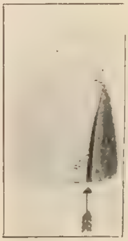


Fig. 28

Cavities in the bicuspids and molars including the proximal and occlusal surfaces. Cavities on the proximal surfaces of bicuspids and molars should always be made proximo-occlusal cavities when the proximating tooth is in position, for this reason:

If the occlusal margin of a proximal cavity is extended to a self cleansing surface the enamel will either be broken away by the plugger or during mastication, of if the enamel is protected the filling material will be too thin to have good edge strength. Fig. 7—If this margin is not brought to a self cleansing surface there will be a recurrence of decay if there is a condition of susceptibility in the mouth. These cavities have long been the bugbear of the average practitioner, but when they are properly prepared and filled, are among the easiest to make and those in which permanent results are the most assured.

The gingival step should be under the free margin of the gum and perfectly flat both mesio-distally and bucco-lingually and should be broad in proportion to the thickness of the tooth Fig. 6—The buccal and lingual walls should be extended to smooth, self cleansing surfaces which usually bring them near the angle of the tooth Fig. 5—They should be as near at right angles to the axial wall as the strength of the tooth will permit and should be slightly undercut in the axio-linguo-gingival and axio-bucco-gingival angles. Fig. 29.

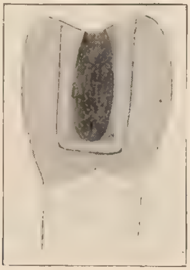


Fig. 29

The axial wall should be made at right angles to the gingival step and if badly decayed should be built up with cement. The occlusal step should be made by cutting a dovetail through the enamel into the dentine and should be broad enough for resistance and retention and to include within the cavity that part of the tooth which comes in contact with the cusp of the antagonizing tooth. The walls should be nearly perpendicular with very slight undercuts. The width and depth of this step should be in proportion to the strain that is liable to be put on the filling and the occlusion and its landmarks should be very carefully observed before beginning to prepare the cavity. I have heard objections made to this form of preparation on the ground that we are not justified in cutting away so much sound tooth structure. But if you will remember that the strength of the tooth is in the dentine and not in the enamel and that it is seldom necessary in extension either on the occlusal or proximal surfaces of a tooth to go very deep into the dentine and that we do little more than replace the enamel of that tooth with a gold enamel and when you remember that it requires only half as much retentive form to retain a filling when the retention is made in the occlusial as it does when made in the buccal and lingual walls, the fallacy of this argument will be plainly seen.

It has been impossible in even this lengthy paper to give you every cavity preparation that can be made. But I have tried to give you the fundamentals and some typical forms which you can apply and modify as your cases present themselves. Good judgment must be used in their application. It would be the height of folly to make large extensions in the mouth of a person more than 50 or 60 years old in which a condition of permanent immunity seemed to exist. It would be barbarous to make large extensions for one of those extremely nervous patients to whom the least touch of the instrument is the keenest torture. These fundamentals apply to the ordinary case in which there is an intermittent condition of susceptivity and immunity and for whom you desire to make operations that are permanent in their character.

A summary might be given as follows:

First: Restore the tooth or teeth to be operated on to their normal position and occlusion, making a normal inter-proximal space and contact point.

Second: Remove all enamel rods not supported by dentine.

Third: Extend all cavity margins to smooth surfaces.

Fourth: Extend gingival margin under the gum and all other margins to such smooth surfaces that they will be kept clean by the excursions of food and the action of the lips, cheeks and tongue.

Fifth: The cavo-surface angle should be beveled from one-fifth to two-thirds the thickness of the enamel.

Sixth: Make all resistance and retentive form so that the greatest retention is at the point of stress.

Seventh: The interior of all cavities should be made with flat seats and square definite angles.

CAVITY PREPARATION AND MANIPULATION OF NON-COHESIVE GOLD IN CERVICAL THIRD TO ONE-HALF OF APPROXIMAL CAVITIES*.

BY H. A. SHANNON, D. D. S., LINCOLN, NEBRASKA.

The use of non-cohesive gold in the cervical third to one-half of approximal cavities is not new to a great many, but there are others who have passed through their school days and subsequent years of practice without having had the importance of the use of this kind of gold impressed upon their minds.

The object of this paper is to help some out of difficulties which they have encountered in manipulation due to a faulty cavity preparation, and to get others started along a line which, if followed, I am sure they will be benefited sufficient in results to more than repay them for their efforts.

The filling of the cervical half of an approximal cavity in a bicuspid or molar with cohesive gold is rather slow and in many cases the results are not as satisfactory as we had hoped for. We all realize how difficult it is to make all margins good at all times even though we have direct access to them, and how much poorer must those margins be that we cannot reach so easily.

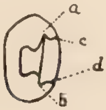


Fig. 1

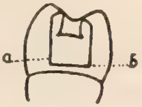


Fig. 2

The preparation of the cavity does not vary materially from the lines advocated by Dr. G. V. Black, and Dr. C. N. Johnson for cohesive gold.

The floor should be flat and at right angles to axial wall (*a* and *b*) Fig. 1. Angles formed by juncture of buccal and lingual walls with the floor should be slightly acute so far as dentinal position of cavity is concerned. Fig. 2 at (*a* and *b*). Enamel margins should be beveled to cleavage (*c* and *d*) Fig. 1. The angle formed by the juncture of the buccal and lingual walls with the axial wall should be acute as at (*a* and *b* Fig. 1).

---

*Read before the Nebraska State Dental Society, 1906.

A step should be made and prepared for the retention of cohesive gold. The most satisfactory non-cohesive gold I have found is either Morgan and Hastings *soft* foil, or Abbey's soft foil. When speaking of either of these golds we are referring to those that cannot be made cohesive by annealing. Hence there will be no sticking of one cylinder to another at any time during the operation.

The gold is prepared for use as follows:

Take a sheet of No. 4 foil and fold into a ribbon of sufficient width to make cylinders one-fourth longer than the cavity measures from margin to axial wall. Using triangular roller No. 12, roll the ribbons into proper sized cylinders for case in hand. Grasping one of the cylinders in the pliers place it in the cavity with one end resting firmly against the axial wall and press it firmly against the floor of the cavity, and gently into the angle and against the buccal wall as (*a* in Fig. 3). The second cylinder is placed in a similar manner against the lingual wall (*Fig. 3 b*). In case two cylinders are sufficient for the case these should be condensed as represented in Fig. 5. Fig. 4 gives a vertical view of the cylinders in place showing projection. In case two cylinders will not be sufficient to fill the cavity as desired a third may be used. In case a third is to be used the first two should be placed as represented in Figs. 6 and 7 and the third placed between the two as shown in Fig. 8. The condensing should now take place and the blow should be so directed as to drive the cylinders more closely against the axial wall than to pull them from it.

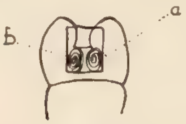


Fig. 3

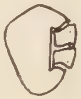


Fig. 4

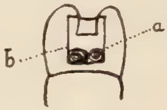


Fig. 5

In case the non-cohesive gold fills the cavity as represented in Fig. 8 the cohesive gold may be started in the step portion and gradually carried out to firmly anchor the non-cohesive.

The non-cohesive cylinders should at this time be malleted or burnished back into the cavity and the excess trimmed to the shape of the tooth so as to help in the contouring of the cohesive gold.

In case the non-cohesive gold fills the cavity as represented in Fig. 5 I would recommend using a small inverted cone bur in the axial angles at (*a* and *b* Fig. 5). This is done to prevent any movement to the cohesive while it is being started.

In case some one of the fibre golds are used for starting the cohesive part it will be found that they will cohere to the non-cohesive in case they have been well annealed.

In many cases I find it a decided advantage to adjust the matrix and place a wedge next the cervical margin to retain the band in closer apposition at that point before inserting the gold.

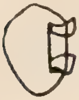


Fig. 6

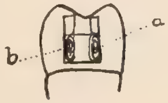


Fig. 7

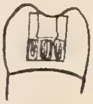


Fig. 8

If the wedge has been well adjusted it will be found that the filling projects very little and will need much less trimming where it is difficult to reach.

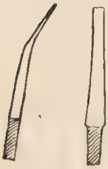


Fig. 9

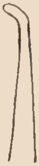


Fig. 10

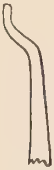


Fig. 11

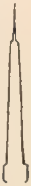


Fig. 12

Figs. 9, 10, 11 and 12 are the instruments generally used for this part of the work.

No. 9 is the instrument used to accomplish the result seen in Figs. 6 and 7. No. 10 is a hand instrument for condensing. No. 11 is to be used with the hand mallet for more thorough condensing. No. 12 is a triangular pointed instrument used for rolling the gold into cylinders.

* * *

REMOVAL OF A BROKEN GATES-GLIDDEN DRILL.

BY DEWEY D. SMITH, D. D. S., SANDUSKY, OHIO.

Many are lucky enough never to break a Gates-Glidden drill only where they are intended to break—up near the shank.

Not long ago, in cleaning out an upper lateral, my Gates-Glidden drill broke off, leaving about a quarter of an inch of drill in the tooth.

After failing to get it out by the use of pliers, etc., I stepped over to the stock room of a telephone company and borrowed a large horseshoe magnet, magnetized another Gates-Glidden drill by allowing the drill to rest on the magnet for a short time, placed the drill alongside the piece still in the tooth; worked the one thus magnetized around in the tooth to be sure there was a good contact; removed my Gates-Glidden and the broken piece came out with my magnetized drill.

METHODS AND EQUIPMENT FOR BEDSIDE DENTAL TREATMENT*.

BY H. T. SMITH, D. D. S., CINCINNATI, OHIO.

The subject of Bedside Dental Treatment is one more or less familiar to all dental practitioners, forced upon them as it is by the emergencies of general practice; but I have recently given the subject sufficient attention to systematize its methods and apparatus, and I make that my excuse for presenting to you these observations, and exhibiting a special instrument case.

I have considered the subject of bedside treatment under three headings, firstly its desirability, secondly its feasibility, thirdly, its methods and equipment.

I take it, that the primary idea in all dental professionalism, is the comfort of the patient and the relief of pain. To this idea, any restorative operation, or cosmetic treatment should be secondary and subsequent. There follows then, the necessity of giving a patient the responsibility of whose case has been undertaken by a dentist, the promptest relief possible, even though that patient be confined to his home.

---

*Read before the Northern Ohio Dental Association, June, 1906.

As between the desirability of visiting an invalid patient at his home and the convenience to the dentist of requiring such a patient to come to the office for treatment there should be no question.

There are two classes of patients whom it is desirable to visit for dental treatment: firstly, those who are actually confined to the house, and secondly, what we may call the working cases.

In the first class we find most of our emergency treatments.

It includes patients confined to the bed or at home by dental disease or other illness, chronic invalids, elderly people confined by the infirmities of age, women in expectant motherhood, children with contagious diseases, and the various forms of accidents involving the teeth. The number in this class increases materially with the inclemency of the weather. To all of these calls the dentist feels obliged to respond.

But it is to the second class, the walking cases, that I wish to call your attention. It includes particularly those patients, requiring dental treatment, that are visiting our offices from day to day, not sufficiently ill to be prevented from coming, but whose strength and vitality are nearly exhausted at each visit and who are finally put to bed as a result of such exhaustion. Such a patient is usually under treatment at home by his physician, and it would seem the plain duty of the dentist to visit him for dental treatment in the same way. Why is this not expected of the dentist, and why does he not do it? My observations of the excellent methods of home treatment, with the carefully studied equipment adopted by oculists, rhinologists, and other medical specialists who conduct office practices similar to those of the dentists, lead me to believe that we have been somewhat derelict in this particular department of practice.

The *feasibility* of bedside treatment depends upon the flexibility which the dentist is able to inject into the routine of daily practice as well as upon the appreciation of his clientile, and upon his ingenuity in devising a satisfactory equipment.

A busy practice, systematized by years of study to make each hour count, does not readily bend from its established routine. It is just such a practice, however, that will properly compensate the dentist and show its appreciation of his care for the health and comfort of his patients. My observations have been that the thanks and appreciation for such treatment is very gratifying and out of all proportion to that for similar treatment made in the office.

Now as to methods and equipment. It is my practice to make these visits either early in the morning or at the noon hour, or in the afternoon after regular office hours. There are times, however, when the case is being seen in consultation; then the hour must be arranged with the physician or consultant.

For the past three years I have been fortunate in possessing a reliable automobile, one that is available in all kinds of weather, and the equipment is thus easily carried. My assistant accompanies me, being even more useful there than in the office, in setting up the dental engine, arranging the instruments and assisting in the treatment.

Regarding the apparatus, it consists essentially of a physician's operating bag, carrying a modified dental engine, the operating instruments, and mouth illuminating apparatus. The instrument case is one known as the half-cabin physician's bag, about 17 inches long and 6 inches wide. The lower portion is removable and contains instruments, trays, and a complete set of half-ounce glass-stoppered medicament bottles. The upper portion carries the engine, illuminating apparatus and other larger objects.

The portable dental engine is a most important part of the equipment. Your experience must have been that in more than 50 per cent. of these bedside treatments, the operation of opening up the pulp chamber, or root-canals is involved, and the ineffectual struggle to accomplish this without the dental engine is most annoying. I have therefore constructed this hand engine, which, while not especially rapid or powerful, serves all purposes.

The engine equipment is carefully selected to furnish the sharpest and most rapid cutting burs. A full set of Beutelrock hand and engine root-canal instruments has been of the greatest use. The broaches, canal-dressing instruments, and pluggers are just as important. The explorers, scalers, extracting forceps, elevators, crown-slitting instruments, mouth props, and most others of the larger instruments are transferred from the office operating room to the carrying case at the time of the visit. They are sterilized in the office, and placed in sterile towels which have been sewed into pockets, so that they become instrument rolls, easily washed and sterilized for each visit. Napkins, cotton rolls and a saliva-ejector operated by a hand-bulb are always taken. A hypodermic syringe, ethyl chloride tube and other apparatus for local anæsthesia are included.

The subject of a general anæsthetic for any case requiring it is one solved either by the dentist or the attending physician. I have a portable nitrous oxide apparatus available at all times, and the somnoform equipment has also been found satisfactory and compact.

Of course the materials and instruments for making temporary fillings and dressings and oxyphosphate fillings are necessary, but permanent forms of fillings are not attempted.

A small surgeon's case of lances and probes is carried in the upper portion of the bag and a reliable alcohol lamp is included. Where it is known that the residence visited is using the incandescent current for illumination, as is the case generally in Cincinnati, I include a sixteen-candle-power lamp with reflector and handle and a good length of cord with socket plug. An electric battery hand lamp is provided when current is not available. So much for the equipment. I might go into a description of each instrument and appliance, but you will readily grasp their details at a glance if you care to examine them.

Now, in conclusion, I would not have you gather from my advocacy of this method of practice that I spend all my time treating patients at their homes, or that it would be desirable that any dentist should do so. Weeks and months may elapse without this instrument case being used at all; then again in very bad weather a patient may be treated every other day for a week.

It is a method that might be abused by the patient, probably also by the dentist; but this kind of dental treatment is expensive, and that fact will readily keep it within bounds.

I realize that the practice of treating invalid patients at their homes is not new to you, gentlemen, but the idea of preparedness, of having an instrument case ready equipped for these visits, I trust will appeal to your favorable consideration.

* * *

THE BACTERIAL EFFICIENCY OF CERTAIN MOUTH-WASHES.*

BY A. R. ROSS, M. S., D. D. S., LAFAYETTE, INDIANA.

The many papers that have appeared from time to time on the subject of mouth-washes have covered the ground quite thoroughly. There is, therefore, but little that can be said that will not be familiar to the profession at large. Possibly some mouth-washes are considered in this paper that have not been included in previous comparative tests, while others of equal importance have not been tested. In selecting the mouth-washes to be tested only those were chosen which were being dispensed and especially advertised in Lafayette. This selection was based on the mouth-washes prescribed by the physicians as well as those advocated by the dentists and druggists of my home city. The following were selected for the tests of bacterial efficiency: Dioxogen, Glyco-thymoline, Lavoris, Borolyptol, Formalid, Thycalol, Sanitol, Pasteurine, Listerine, Benzothymol, Peroxident, Thymolyptoline, Euformol, and Saturated Solution of Boracic acid.

In connection with the bacteriological experiments conducted on these mouth-washes, I wish to express my sincere thanks to my former teacher, Professor Severance Burrage, professor of bacteriology at Purdue university, Lafayette, Indiana; and also to Mr. C. M. Vogel, B. S., also of Purdue, for their efforts to conduct the experiments in a thoroughly scientific manner.

Professor Burrage superintended the experiments, while Mr. Vogel did the active analytical work.

HOW TESTS WERE CONDUCTED.

I desire to state at this point that I am not a stockholder in any of the preparations tested, and have no reason whatever to favor any particular mouth-wash. In order to make the tests absolutely fair and unbiased, Professor Burrage and Mr. Vogel were kept in ignorance of the identities of the preparations. This was accomplished as follows: A sufficient number of ordinary two-ounce bottles were sterilized, after which they were consecutively numbered. Each bottle was then filled with one of the mouth-washes; whereupon the name of the preparation, together with its corresponding number, was recorded in a blank book. This portion of the work was done by me personally, in the absence of Professor Burrage and Mr. Vogel, and the list of mouth-washes never left my possession. Consequently, the analysts only knew they were testing No. —, if you please, without knowing what particular mouth-wash was indicated.

---

*Read before the Indiana State Dental Association, June, 1906.

THE VALUE OF MOUTH-WASHES.

In the subsequent analyses no attention has been given to any of the preparations relative to their alkaline or astringent qualities; but they have only been considered from the viewpoint of their bacterial efficiency. In determining the value of a mouth-wash several factors must be considered. In the first place, a mouth-wash should not be injurious in the slightest degree to the teeth, gums or other tissues of the oral cavity. No amount of bacterial efficiency would compensate for an injurious effect upon the structures within the mouth.

Secondly, a mouth-wash should fulfill the claims of its manufacturer relative to its efficiency as an antiseptic or germicide. It should not appreciably deteriorate in strength or efficiency in any manner within a reasonable period of time. Finally, it is desirable that a mouth-wash have a pleasant taste, to insure its continued use when prescribed to our patients.

Strictly speaking, in order for any preparation to prove itself a germicide, it must kill the spore of anthrax bacillus within the specified time. It is quite probable that a mouth-wash which would fulfill this condition would, if introduced into the mouth, exert an injurious effect upon the mucous membrane. For all practical purposes it is not necessary for a mouth-wash to be of this strength in order to exercise a germicidal action on the tissues of the mouth. So long as the bacteria remain in the spore formation they need give us no concern. It is the active vegetative form with which we have to contend, and the following tests have dealt exclusively with the bacteria in this form.

BACTERIA USED TO DETERMINE EFFICIENCY OF THE MOUTH-WASHES.

The bacteria used to determine the efficiency of the above-named mouth-washes were the anthrax bacillus, the typhoid bacillus and the staphylococcus pyogenes aureus. The anthrax bacillus was selected because it is one of the most difficult to kill of all bacteria. The typhoid bacillus was chosen on account of the comparative ease with which it is destroyed. The staphylococcus pyogenes aureus occupies a position midway between the other two bacteria in the resistance it offers to destructive agencies, but it is especially of interest to us as one of the agents to be encountered in pyogenic infection. In order to insure that the bacteria used for the tests would be of the active vegetative form, 24-hour bouillon cultures at 37° centigrade were used. The mouth-washes were tested in three different strengths: 100 per cent., 50 per cent, and 25 per cent. The 100 per cent. refers to the mouth-washes as they are dispensed in their commercial forms. The different bacteria were subjected to the action of each of the respective strengths of the mouth-washes for one-half-minute, one-minute, three-minute and five-minute tests.

METHODS USED.

A modification of the Miller method was used in the experiments, all of which were conducted in the bacteriological laboratory of Purdue university. Test tubes containing five c. c. of 24-hour bouillon cultures of the bacteria were used. Five c. c. of the respective strengths of the mouth-wash to be tested were placed in sterilized test tubes. Other test tubes contained sterile-water. Some loose fibres of antiseptic cotton would be caught on the end of a sterilized platinum wire which had been bent in the form of a hook. To insure sterilization this cotton would be passed through a free flame. It would then be introduced into the bouillon culture of the bacteria, and immediately withdrawn after being pressed against the upper portion of the test tube to expel the excess bouillon. It would at once be immersed in the percentage strength of the mouth-wash for which it was intended, where it would be left for the required time exposure. Before being withdrawn, the excess of the mouth-wash was expelled by pressing the cotton against the upper portion of the test tube. The cotton was then quickly rinsed in the sterile water, after which it was introduced into a test tube containing liquefied agar. The cotton was then violently agitated within the agar, after which it was discarded, the agar being poured into a sterilized Petri plate and labeled with the number and percentage strength of the mouth-wash used, and the name of the bacterium employed. As soon as the agar cooled sufficiently, the plate would be placed in the incubator and kept at 37° centigrade for 24 hours, after which it would be examined, and any colonies of bacteria counted. It was necessary to rinse the cotton in sterile water after withdrawing it from the mouth-wash, in order to limit the time of exposure of the bacteria to the action of the mouth-wash. All the tests were made in duplicate and two kinds of control experiments were conducted.

One series of controls was conducted for the purpose of showing how heavy the growth of bacteria would be if not subjected to the action of any mouth-wash. Each step in the method of analysis given above was made with the exception of placing the cotton in the mouth-wash for the specified time. With the exception of the two cases noted below, the number of colonies of bacteria in the agar plate after 24 hours incubation was too large to be counted.

The other method of control experiments had for its object the determination of whether or not any outside infection would be encountered. The cotton would be sterilized, rinsed in the sterilized water, then agitated through a tube of melted agar; the agar would be poured into a Petri plate, and after being cooled, would be incubated for 24 hours at 37° centigrade. This series of tests served to show that everything was sterile, which was supposed to be such; the only steps omitted being the immersion into the bouillon culture of the bacteria and afterwards into the mouth-wash.

Both series of controls were conducted at the same time, and made under the same conditions that governed the tests made on the different preparations.

TABULATION OF RESULTS OF TESTS.

In tabulating the results of the tests on the mouth-washes, where the number of colonies was less than 200, the number is given; between 200 and 500 is designated as "light growth"; between 500 and 1,000, as "medium growth"; 1,000 to 10,000 is called "heavy growth," while above 10,000 is designated as "very heavy growth." Owing to lack of space in the tables, these terms have been abbreviated to read "l. growth"; "m. growth"; "h. growth"; v. h. growth".

TABLE NO. I. ANTHRAX BACILLUS.

Number. . . .	Name of mouth-wash. .	Percentage strength. . . .	Time of Exposure.			
			½ min.	1 min.	3 min.	5 min.
1	Dioxogen	100	no growth	no growth	no growth	no growth
		50	10	no growth	no growth	no growth
		25	27	18	no growth	no growth
2	Glyco-thymoline	100	v.h. growth	h. growth	l. growth	12
		50	v.h. growth	v.h. growth	m. growth	163
		25	v.h. growth	v.h. growth	h. growth	l. growth
3	Lavoris	100	v.h. growth	v.h. growth	h. growth	47
		50	v.h. growth	v.h. growth	v.h. growth	128
		25	v.h. growth	v.h. growth	v.h. growth	192
4	Borolyptol	100	v.h. growth	v.h. growth	h. growth	52
		50	v.h. growth	v.h. growth	v.h. growth	127
		25	v.h. growth	v.h. growth	v.h. growth	198
5	Formalid	100	v.h. growth	v.h. growth	h. growth	99
		50	v.h. growth	v.h. growth	v.h. growth	l. growth
		25	v.h. growth	v.h. growth	v.h. growth	l. growth
6	Thycalol	100	l. growth	23	no growth	no growth
		50	m. growth	149	no growth	no growth
		25	h. growth	l. growth	17	no growth
7	Sanitol	100	25	no growth	no growth	no growth
		50	167	93	no growth	no growth
		25	l. growth	l. growth	123	72
8	Pasteurine	100	v.h. growth	v.h. growth	h. growth	35
		50	v.h. growth	v.h. growth	v.h. growth	56
		25	v.h. growth	v.h. growth	v.h. growth	l. growth
9	Listerine	100	v.h. growth	h. growth	h. growth	14
		50	v.h. growth	v.h. growth	h. growth	63
		25	v.h. growth	v.h. growth	v.h. growth	l. growth
10	Benzo-thymol	100	v.h. growth	v.h. growth	h. growth	101
		50	v.h. growth	v.h. growth	v.h. growth	l. growth
		25	v.h. growth	v.h. growth	v.h. growth	l. growth
11	Peroxident	100	m. growth	l. growth	91	no growth
		50	h. growth	m. growth	l. growth	73
		25	h. growth	m. growth	m. growth	l. growth
12	Thymo-lyptoline	100	v.h. growth	v.h. growth	v.h. growth	41
		50	v.h. growth	v.h. growth	v.h. growth	177
		25	v.h. growth	v.h. growth	v.h. growth	l. growth
13	Euformol	100	no growth	no growth	no growth	no growth
		50	no growth	no growth	no growth	no growth
		25	no growth	no growth	no growth	no growth
14	Sat.sol'ti'n bor'cic acid	100	v.h. growth	v.h. growth	v.h. growth	115
		50	v.h. growth	v.h. growth	v.h. growth	l. growth
		25	v.h. growth	v.h. growth	v.h. growth	l. growth

The controls in the 5-minute tests averaged 400 colonies of bacteria, which will explain the low numbers recorded throughout this test.

TABLE NO. 2. TYPHOID BACILLUS.

Number	Name of mouth-wash	Percentage strength	Time of Exposure.			
			½ min.	1 min.	3 min.	5 min.
1	Dioxogen	100	no growth	no growth	no growth	no growth
		50	no growth	no growth	no growth	no growth
		25	10	no growth	no growth	no growth
2	Glyco-thymoline	100	h. growth	m. growth	no growth	no growth
		50	v.h. growth	h. growth	173	no growth
		25	v.h. growth	h. growth	m. growth	49
3	Lavoris	100	v.h. growth	h. growth	l. growth	no growth
		50	v.h. growth	v.h. growth	m. growth	6
		25	v.h. growth	v.h. growth	h. growth	32
4	Borolyptol	100	h. growth	h. growth	l. growth	no growth
		50	v.h. growth	h. growth	h. growth	24
		25	v.h. growth	v.h. growth	v.h. growth	50
5	Formalid	100	h. growth	h. growth	l. growth	no growth
		50	v.h. growth	h. growth	m. growth	6
		25	v.h. growth	v.h. growth	h. growth	91
6	Thycalol	100	27	no growth	no growth	no growth
		50	67	no growth	no growth	no growth
		25	l. growth	93	no growth	no growth
7	Sanitol	100	l. growth	8	no growth	no growth
		50	m. growth	l. growth	no growth	no growth
		25	h. growth	m. growth	no growth	no growth
8	Pasteurine	100	v.h. growth	v.h. growth	l. growth	no growth
		50	v.h. growth	v.h. growth	m. growth	18
		25	v.h. growth	v.h. growth	h. growth	41
9	Listerine	100	h. growth	162	l. growth	no growth
		50	v.h. growth	h. growth	m. growth	no growth
		25	v.h. growth	v.h. growth	h. growth	23
10	Benzo-thymol	100	v.h. growth	v.h. growth	m. growth	no growth
		50	v.h. growth	v.h. growth	h. growth	12
		25	v.h. growth	v.h. growth	v.h. growth	31
11	Peroxident	100	m. growth	l. growth	no growth	no growth
		50	h. growth	m. growth	163	no growth
		25	h. growth	h. growth	l. growth	no growth
12	Thymo-lyptoline	100	v.h. growth	h. growth	m. growth	no growth
		50	v.h. growth	v.h. growth	h. growth	17
		25	v.h. growth	v.h. growth	v.h. growth	45
13	Euformol	100	no growth	no growth	no growth	no growth
		50	no growth	no growth	no growth	no growth
		25	no growth	no growth	no growth	no growth
14	Sat.sol'ti'n bor'cic acid	100	v.h. growth	v.h. growth	m. growth	15
		50	v.h. growth	v.h. growth	h. growth	33
		25	v.h. growth	v.h. growth	v.h. growth	97

The controls in the 5-minute tests averaged only 140, which will explain the low number of colonies throughout this test.

TABLE NO. 3. STAPHYLOCOCCUS PYOGENES AUREUS.

Number	Name of mouth-wash	Percentage strength	Time of Exposure.			
			½ min.	1 min.	3 min.	5 min.
1	Dioxogen	100	no growth	no growth	no growth	no growth
		50	no growth	no growth	no growth	no growth
		25	no growth	no growth	no growth	no growth
2	Glyco-thymoline	100	v.h. growth	h. growth	110	no growth
		50	v.h. growth	v.h. growth	l. growth	l. growth
		25	v.h. growth	v.h. growth	h. growth	h. growth
3	Lavoris	100	v.h. growth	v.h. growth	v.h. growth	h. growth
		50	v.h. growth	v.h. growth	v.h. growth	v.h growth
		25	v.h. growth	v.h. growth	v.h. growth	v.h growth
4	Borolyptol	100	v.h. growth	v.h. growth	v.h. growth	h. growth
		50	v.h. growth	v.h. growth	v.h. growth	v.h.growth
		25	v.h. growth	v.h. growth	v.h. growth	v.h. growth
5	Formalid	100	v.h. growth	v.h. growth	v.h. growth	h. growth
		50	v.h. growth	v.h. growth	v.h. growth	v.h. growth
		25	v.h. growth	v.h. growth	v.h. growth	v.h growth
6	Thycalol	100	173	56	no growth	no growth
		50	l. growth	111	no growth	no growth
		25	m. growth	m. growth	l. growth	no growth
7	Sanitol	100	no growth	no growth	no growth	no growth
		50	90	no growth	no growth	no growth
		25	107	no growth	no growth	no growth
8	Pasteurine	100	v.h. growth	v.h. growth	v.h. growth	h. growth
		50	v.h. growth	v.h. growth	v.h. growth	v.h.growth
		25	v.h. growth	v.h. growth	v.h. growth	v.h.growth
9	Listerine	100	v.h. growth	h. growth	h. growth	m. growth
		50	v.h. growth	v.h. growth	h. growth	h. growth
		25	v.h. growth	v.h. growth	v.h. growth	v.h.growth
10	Benzo-thymol	100	v.h. growth	v.h. growth	v.h. growth	m. growth
		50	v.h. growth	v.h. growth	v.h. growth	v.h.growth
		25	v.h. growth	v.h. growth	v.h. growth	v.h.growth
11	Peroxident	100	l. growth	184	no growth	no growth
		50	m. growth	l. growth	140	no growth
		25	h. growth	h. growth	l. growth	160
12	Thymo-lyptoline	100	v.h. growth	v.h. growth	v.h. growth	h. growth
		50	v.h. growth	v.h. growth	v.h. growth	v.h.growth
		25	v.h. growth	v.h. growth	v.h. growth	v.h.growth
13	Euformol	100	no growth	no growth	no growth	no growth
		50	no growth	no growth	no growth	no growth
		25	no growth	no growth	no growth	no growth
14	Sat.sol'ti'n bor'cic acid	100	v.h. growth	v.h. growth	v.h. growth	v.h.growth
		50	v.h. growth	v.h. growth	v.h. growth	v.h.growth
		25	v.h. growth	v.h. growth	v.h. growth	v.h.growth

ALL PREPARATIONS HAVE VALUE AS ANTISEPTICS.

The experiments evidently prove that all the preparations have value as antiseptics. This is quite clearly shown in the 5-minute tests on Anthrax and Typhoid bacilli where the growth in the control plates was comparatively slight. In every case the action of the different mouth-washes decreased the growth of bacteria, thus indicating that the preparations exerted an inhibitory effect on the bacterial growth.

From the viewpoint of bacterial efficiency, the tests seem to indicate that Euformol is the most efficient germicide, with Dioxogen and Sanitol as close seconds. Euformol completely destroyed the bacteria in every test made. While Dioxogen destroyed the bacteria in every test made on Staphylococcus Pyogenes Aureus, it was unsuccessful in the ½-minute test of the 25% solution on the Typhoid bacillus, and also in the ½-minute test of the 50% and 25% solutions, as well as in the 1-minute test of the 25% solution on the Anthrax bacillus. Sanitol does not appear to have quite as great efficiency as Dioxogen, as the 100% strength failed to kill either the Anthrax or Typhoid bacilli in ½-minute exposures, though it did destroy Staphylococcus Pyogenes Aureus in ½-minute with the full strength employed, failing to do so, however, with the 50% and 25% solutions in the same length of time. One peculiar feature in connection with the tests on Sanitol is in its effect on Anthrax and Typhoid bacilli. In the ½-minute and 1-minute tests it was more destructive to the Anthrax, while in the 3-minute and 5-minute experiments it was more efficient in its action on the Typhoid bacilli. This apparent contradictory result may be due to the difference of resistance offered to ingredients of Sanitol by the bacteria. The Typhoid bacillus may offer greater resistance to the entrance of ingredients of Sanitol, which exert, when once within the vegetative cell, a greater destructive action than they do on Anthrax.

Other mouth-washes which appear to have comparatively great efficiency are Thycalol, Peroxident and Glyco-thymoline, in the order given. All the other preparations have varying degrees of efficiency, but do not appear to have as thorough germicidal effect as those named above. The least efficient of all the solutions tested was the saturated solution of Boracic Acid.

While several of the preparations tested appear to possess a high degree of efficiency as germicides, in practical every-day use it is unlikely that this high standard would be maintained. This result would not arise from the condition of the preparations, but from the manner in which they are used. We have seen that, with those mouth-washes which seem to have the greatest germicidal efficiency, it is necessary in the majority of cases to use the full strength of the preparation in order to obtain the desired result within ½-minute. The majority of our patients will not hold a mouth-wash in their mouths longer than ½-minute, unless otherwise instructed. The usual directions accompanying the preparations provides for a comparatively small amount of the mouth-wash to be diluted with many times its volume of water. The result is, that the mouth-wash has been weakened very considerably. The water used to dilute the preparation is in most instances ordinary tap water from the public water supply, which is itself teeming with bacteria. When we have a mixture of a large amount of bacteria-charged water, with a very small amount of mouth-wash, the germicidal efficiency is probably nil. When such a weak solution is used as a mouth-wash, it will not exert a reasonably germicidal effect, but will probably be of value only for its slight antiseptic action and the mechanical cleansing effect.

DISCUSSION.

Dr. Harry C. Kahlo, Indianapolis, Ind.: In accordance with the time-honored custom which prevails in all well-regulated dental association meetings, I am first to thank the essayist for his excellent paper, and second, to make apologies for the inadequacy of my discussion.

These I can do with all sincerity, for, Doctor Ross, you have given us a very unusual as well as a very masterly paper. While I am willing to assume my share of the blame, I trust I may be pardoned when I make the statement that papers of the calibre of the one just read are not numerous in the history of the Indiana Dental Association.

The essayist has hit upon a most interesting subject and has pursued it in a scientific manner. As a consequence he has presented conclusions which are to be taken as authoritative and final. It has been a pleasure to me to study this paper, and I only regret that I have not had an opportunity to go into the subject experimentally, for I believe it would be a most interesting work. We, or at least many of us, of the State association are too prone to write papers which are not the result of research, but rather the acceptation of a few theories which have been advanced by hobbyists, as facts, and out of these prepare papers which are lacking in interest and conviction. This condition is accounted for very rationally in the following way: The older practitioners have little leisure, and such time as they have they prefer, and naturally enough, to spend in some form of recreation. The younger men in the profession, who have the time to devote to research, are lacking in self-confidence when it comes to appearing before the society. A third difficulty lies in the fact that there is a certain inborn sense which craves research, and few possess it.

Here we have an example of the young man's work which not only speaks for itself, but should easily excite the envy of those of us who are less talented. The Indiana Dental Association should be the stronghold of the young practitioner, the place where he should feel at liberty to occupy the floor, and to take an active part in every procedure of its meetings.

But I am side-tracked from the main line of the subject in hand. To me the value of Doctor Ross' paper is enhanced by the assistants he has had in his work. Doctor Burrage we know to be a most reliable bacteriologist, and experiments made under his eye cannot be other than acceptable.

That the subject is one of the most important, if not the most important with which we have to deal, is very evident, and it is one which cannot be overworked. How much more valuable, after all, is it to discover that which will actually prevent disease than that which will cure it—perhaps not to the present generation, but to those to follow. A careful study of the paper has proven to me the following:—

First—That we are erring in prescribing washes the antiseptic value of which is unknown,

Second—That we are too indifferent as to the manner in which mouth-washes are used.

Third—That many of the most popular mouth-washes are practically valueless.

Fourth—That where washes are to be diluted, sterilized water should be used.

Fifth—That the wash should be used thoroughly if results are to be attained.

How many of us have been misguided by the persuasive oratory and courteous manners of the representatives of various manufacturing chemists who graciously supply us with pound packages for our own use and innumerable small bottles to distribute among our patients?

Not having the facilities for experimentation at hand, or perhaps the knowledge to pursue them, it is much easier to take for granted the information received from the agent, or that which appears in the literature accompanying, or the label upon the bottle. In short, if the remedy has an agreeable, and especially a refreshing taste, we go ahead and prescribe it as a sure-enough antiseptic mouth-wash.

This, we must acknowledge, is an unscientific method, and especially is it so when we direct patients to dilute in 2, 3, or 4 parts water, irrespective of the particular kind of wash we happen to be advocating at the time.

What is the result of this sort of advise or suggestion? The patient pours an uncertain quantity into a glass, adds any old quantity of water from the tap, swashes it about the mouth for from three to five seconds, and the operation is completed. Well, the mouth has a refreshed feeling, and perhaps the breath is sweeter, but that is all. These methods do not inhibit caries, in the slightest degree, and the only gainers are the manufacturer, the jobber, and the retailer, who have divided among them the dollar per.

If we have a definite knowledge of one or more mouth-washes which *are* antiseptic, it is our duty to prescribe these, and these alone, in definite proportions, and furthermore, we should be explicit in our instructions that the dilution must be made in sterilized water and that it should be retained in the oral cavity for a specified time.

Doctor Ross has given us this knowledge so far as it concerns a number of the proprietary remedies, and Doctor Hunt, in an excellent paper read before the New York State Dental Society, in 1904, and which appears in the October number of the *Cosmos* of that year, gave us the result of his experimentation with such drugs as Formalin, 1-200 Benzoic Acid, 1-200 various solutions of Mercuric Chlorid, and Salicylic Acid, 1-200.

The methods used by these two authors in arriving at conclusions were quite different, and in this particular I prefer Doctor Hunt's method since his cultures were made from fresh human saliva. Not that I doubt the reliability of Doctor Ross' tests, but it would seem more practicable to get results directly from the quarter in which we are to apply our own efforts.

Regarding the use of proprietary remedies, I am perfectly willing to discard any sentimental prejudice which I may have concerning these agents, provided I am convinced of their efficacy, but it is a crime to assure a patient that in a certain remedy he has an efficient antiseptic mouth-wash, when in reality he has nothing more than an agreeable toilet article.

There seems to be a reluctance on the part of the profession to condemn any of the well-advertised agents. Whether this is an act of charity or the lack of conviction, I do not know, but for my part, if Glyco-thymoline, Borolyptol, etc., are not what their projectors report them to be, I don't want them, nor do I want my patients to have them. On the other hand, if, as the essayist shows, Euformol or Dioxogen are practical antiseptics, I consider it my duty to advocate their use whenever possible. A good antiseptic mouth-wash is a valuable article, especially in the hands of those of our patients whose teeth are prone to the ravages of caries. Every patient should be carefully instructed as to the importance of this prophylactic measure, just what wash to use, and when and how to use it, if he would spare himself some portion of the discomfiture incident to the dental chair.

The paper offers a fruitful field for discussion, especially among those who have had some experience in bacteriological work.

Dr. J. M. Rosenthal, Ft. Wayne, Ind.: We have listened to an excellent and interesting paper, one well worthy of our consideration. Dr. Ross has exerted much effort and has given much valuable time in careful research in the preparation of his paper. He has also secured the assistance of very able men in doing this work. While it was impossible to consider all the preparations sold for this purpose, he has taken a sufficient number to give us a very good idea of their value. They all have some value, even the proprietary preparations. However, we should guard against the use of any preparation the formula of which we do not know. I think the point is, to determine when we should use such preparations and what we should use them for.

Assuming that we use the mouth-wash as the paper states, or even in twice the strength, and have the patient hold it in his mouth for five minutes, I admit we might kill off all the germs in the vegetative form, but there will be possibly twice as many there within 24 hours.

The use of these preparations reminds one of the rusty nail we have all heard so much about. The oxide of iron is not at all injurious; in fact it is beneficial; it is the rough surface caused by this oxide that forms a place for germs to lodge and multiply by the thousands. This same condition is true of the mouth. If we cleanse the mouth, scale the teeth, fill all cavities, polish rough surfaces, remove roots that cannot be saved, correct irregularities, remove bad crowns, bridge-work, and ill-fitting plates, then the germs will have no place to lodge. Having put the mouth into proper condition, then instruct your patient in the correct use of the brush, and insist that he keep the mouth as clean as possible. Then the harmful germs have no opportunity to grow abnormally. To continue this hygienic condition, a regular visit to the dentist should be suggested.

Potassium chlorate, 55%, is better for the mouth where mercury has been used than anything I know. It counteracts the action of the germs and will heal up ulcerations and prevent salivation. We meet this condition right along, and possibly 50% of the dentists treat it as pyorrhœa. I do not know what effect it would have on anthrax or typhoid bacillus, but I am positive it does prevent salivation and counteracts the action of mercury, which in many instances causes the mouth to develop a bad condition. Mercury assists in filling the mouth full of germs. For this particular condition, chlorate of potash will assist us materially.

Dr. H. B. Tileston, Louisville, Ky.: Mr. President, I assure you, I esteem it a great privilege to address this body on any occasion. I am not a bacteriologist, but in view of the various reports we have had of this character, it seems to me we can place very little reliance on mouth-washes, as a general thing, to sterilize the human mouth. It is, however, a question in my mind whether we want to sterilize it as thoroughly as some people seem to desire. No doubt there are many benign organisms there. It seems to me about the only thing we can hope for from the use of these preparations is to encourage cleanliness on the part of our patients, give them something as a leading string to persuade them to clean their mouths and teeth. If they don't want to use the simple remedies, then let us give them something we can tell them is a sterilizing agent and will keep their mouths sweet and clean. If these preparations were thorough sterilizers of the oral cavity, I would say, let them alone. There are a great variety of germs found in the mouth. A paper was read by Dr. W. D. Miller at the International Dental Congress, written by Dr. Vicentini, of Italy, who claimed that one germ was the mother of all others, the leptothrix racemosa. That is a malignant organism. If we could be furnished with a bactericidal mouth-wash so selective in its action as to destroy only the numerous family of leptothrix racemosa, then I should welcome it. There are, however, a great many others it would not be desirous to weaken in their activities. Perhaps Dr. Cook may be able to throw some light on this subject. It occurred to me that the value of these experiments is that they enable us to determine intelligently the value of the preparations we have been advocating. I think their chief value is as persuading agents to induce our patients to keep their mouths clean.

Dr. J. D. Patterson, Kansas City: I recommend mouth-washes, but I have always felt the good I expected to do lies along the line spoken of by Dr. Tileston. When a patient uses a mouth-wash he will be more impressed with the idea that he is cleansing his mouth than if he uses pure distilled hot water.

The paper shows us that before these mouth-washes will inhibit the growth of micro-organisms they must be used in a way in which our patients can scarcely be expected to use them. When he speaks of their being germicides and destroying the poison, I presume he means they are antiseptics. They prevent the growth and multiplication of germs, but they are not, in the strict sense of the term, germicides. I am very much interested in this subject, because in my practice I pay a great deal of attention to prophylaxis of the mouth. I am not insistent, and have not been for a great many years, upon the kind of mouth-wash to use, because I have always insisted, in my teaching and in my instructions to my patients, that the surgical operation must remove all irritants first; then irrigation, to remove all the products of decomposition, of suppuration and fermentation, and after that, if the patients will use one of the antiseptics, I advise them to do so. I suppose I use a little stratagem there to induce them to have faith in the wash and keep their mouths more thoroughly cleansed than they have been in the habit of doing, for I do not entirely believe in the efficacy of mouth-washes.

In the treatment of pyorrhœa, I do not depend upon them. When the surgical operation is performed, I irrigate with hot distilled water, using a syringe of great force. In recent years I have introduced in the home treatment of pyorrhœa the self-filling syringe, with a blunt point, which has great force, and I instruct the patient to use it in every space between the teeth, and thus wash out the spaces which cannot be reached with a brush and mouth-wash. This has seemed to me one of the rarest and best methods for obtaining that cleanliness in the mouth which we all desire.

I believe a mistake has been made by a great many practitioners in recommending these washes with which the country is flooded. Many of these preparations are admirable, and perhaps none of them do any positive injury, but they have placed in the minds of the people generally a dependence upon them which has no good reason for being there, and on that account they have slighted the mechanical therapeutics. I have preached to my students that we make them the scapegoat for imperfect mechanical work. If we depend upon these things, considering the results obtained by Dr. Ross, these preparations would have to be used by our patients in a manner we could not induce them to use them to inhibit the growth of the various micro-organisms. But even if they would inhibit them, we do not care to do anything of that kind until, by mechanical means, and by irrigation, every possible particle of matter that can be injurious has been removed.

In the treatment of pyorrhœa, when it has gone on for some time, we must use medicines which are absolutely germicidal in these pockets after all mechanical means have been used. These mouth-washes will not do. We must stimulate the tissues that have been injured and remove the tissues of the alveolar border which have been necrosed and diseased. We must use something stronger than mouth-washes, using such remedies with care, as a matter of course. While I have tried a great many things, I have almost invariably, where a medicine of that kind is needed, used a strong solution of nitrate of silver. I don't think any of the mouth-washes spoken of will fill the bill. I want something that will be at once a germicide and a stimulant to the tissues. I have seen such delightful results from the use of nitrate of silver that I have discarded the other preparations that have been advocated for that purpose. In cases of pyorrhœa, where we desire a subsidence as quickly as possible, the absence of cervical tenderness, the nitrate of silver is far ahead of anything else. Any injury from its use, even in the saturated solution, will not be found if care is taken that it does not reach any of the tissues except the ones intended to be reached.

Dr. G. W. Cook, Chicago: I have been very much interested in Dr. Ross' paper. I think he is to be complimented on the amount of work and the careful work he has evidently done. However, I might say that the results he obtained, from what I could gather from his reading, show there might be two sources of error in the experiments. I do not mean errors exactly, but conditions that might vary the real germicidal properties of the agents employed. Of course the temperature at which the agar-agar was used, as I understand it, was for the purpose of liquefaction, but it would be detrimental to the bacteria unless it was cooled down very quickly. The agent and the heat together would produce the effects a great deal better than the agent alone. Perhaps some of you will remember that some years ago Dr. Quimby and myself made a long series of experiments on germicidal and antiseptic agents. We did not confine ourselves to the proprietary mouth-washes, but in many of the agents we used we found that by cutting small pieces of filter paper, sterilizing them and putting them on a sterile dish and then inoculating that paper with the particular organism, putting the agent on in various solutions, then taking the filter paper and transferring it to the culture media, we found that some of the agents he has used there took 15 minutes to destroy, or at least inhibit, very much of their growth. The agents to me seemed to prove absolutely nil, so far as their germicidal properties are concerned. Dr. Ross has used some we did not, for they were not on the market at that time We came to the conclusion that those we examined were practically useless, so far as their germicidal or antiseptic properties are concerned. The point, of course, is made that we have to use something to persuade our patients to do this because they think they are getting effects. I question the advisability of the profession as a whole deceiving people into doing these things. It may be well in special cases, but somebody will come along after a while and say,"That was taught years ago, and is a fallacy." The people who will follow us are the ones on whom the effects of this work will be thrown, and they are the ones who will have to get rid of it. We might just as well come out as plainly as possible and tell people the real truth and take the consequences.

Dr. Ross' experiments cover a great deal of ground, and when we can go over his tables in a printed form we will get a greater benefit from it. From what I have heard, I will say this society ought to hold up the hand of any man who will go out and do what he has done for the benefit of the profession. It is worth something, if not to you to the generation to come. That is what we are working for; our passing stage here is worth but little. Now, the question is, will we deceive our patients with these things? Why not say to them, "No, you cannot use any agent in the mouth that is a germicide or that is more than slightly antiseptic." First of all, we can advise them to wash the mouth as Dr. Hunt advises in a published work, and use all mechanical means to remove those bacteria, but you will find you have not accomplished much, that the bacteria are still remaining. The effect has only been in the form of a mechanical removal of the bacteria; it has not been in a germicidal way. Why not just take the mechanical means, as Dr. Patterson has said? Why not tell our patients the importance of using a particular thing for the purpose of mechanically removing a certain thing in the mouth? I remember that Dr. Dittmar, in Chicago, devoted an entire afternoon to polishing a tooth for extraction the next day, so I might make some bacteriological cultures. I wanted to find out how many bacteria might have accumulated around the neck of that tooth during the 24 hours after it was polished off and the surface made smooth. There was a vast difference between the bacterial findings between that tooth and the ones which had not been polished, but there was a vast number of them there. It is mechanical means we must rely upon largely for their removal, and if we rely upon anything else our work is not of special benefit.

Dr. Ross brought out a very fine point in regard to the bacteria. He said one agent worked upon the anthrax bacilli, which was considered the most virulent and the most continuous in its action—that is, it can live longer under the most inconvenient circumstances for bacterial life than any organism we know, and yet one agent destroyed the anthrax bacilli more easily than the typhoid bacilli. If you go to the libraries you will find that about 40 men went over this ground 25 years ago, and every one found a different condition with different organisms at different times. The conditions under which organisms live, the conditions of the mouth, the conditions of the mucous membrane, all play an important part when it comes to destroying bacteria, so that our agents are not of great importance.

I like Dr. Ross' paper because it entailed work and shows for something that is to come in the future.

Dr Patterson: I don't want anyone to believe I purposely deceive my patients when I advise them to use any of these mouth-washes. Many people believe there is virtue in these mouth-washes. I do not deceive my patients, and do not expect to, except for their own good. I have the little reservation, after all, in that the antiseptic may be better than pure water.

Dr. Cook: I did not refer to that because of what Dr. Patterson said, but that is what we hear talked a great deal. I see Dr. Patterson's position in the matter, and I don't want to go on record as having combatted his position, because he is right, in a sense, but I question the advisability of its being promiscuously done. Dr. Patterson could advise patients better than I could, and discriminate more closely as to where it could be done.

Dr. Hunt: For two or three years I have abandoned the habit of congratulating the writers of papers, but I am going to break the rule today and congratulate Dr. Ross. No one who has not pursued a similar line of work can appreciate the amount of time and trouble it takes to get the results he presented. This question of the efficiency of mouth-washes permits of so many different technical methods in its experimental work that it is almost impossible for any two investigators to reach the same conclusions with the same set of washes. When you read this paper you will find a number of tables giving the results of experiments with different washes. I hope no one will conceive that the results as stated in the tables would be duplicated in the mouth by the use of these washes. You will not get such results in the mouth, and Dr. Ross says so in his paper. His experiments were made to show the relative efficiency of the washes under the most favorable conditions. When used in the mouth their efficiency depends not only on the solution itself and the length of time it is held in the mouth, but the mucus on the teeth and mucus membrane and food debris in the interproximal spaces must be reckoned with, as they make it difficult for the wash to reach the bacteria. I do not believe these washes are even good antiseptics, in the manner in which they are used. If the best of them are taken undiluted into the mouth and are washed back and forth by the tongue, cheeks and lips for five minutes, some results might be obtained, but their use for a half-minute or a minute, either diluted or in full strength will do no good.

In the series of experiments Dr. Jackson and I carried on two years ago, a different technic was practiced, and we also used single drugs instead of combinations. It has been said here today that you cannot use an antiseptic strong enough to destroy bacteria in the mouth. That is a mistake. There are several antiseptics which, in a strength that may be used in the mouth, will destroy vast quantities of bacteria. But, as Dr. Tileston has remarked, why should we destroy these bacteria? If you can get the right kind of salt to put on the tail of the leptothrix racemosa, which produces caries, so it can be caught, the rest of the bacteria need not be disturbed. Under the conditions mouth-washes are used in the mouth, I do not believe they are antiseptic to any appreciable degree.

Dr. Adams: From all that has been written, and from all the investigations we have had along this line, it seems that the matter resolves itself down to this: When our patients come to us we must tell them to use plenty of pure water, their toothbrush and elbow grease; then come to our offices frequently and have their oral cavities put in as good a prophylactic condition as possible.

Dr. Patterson: I have a favorite prescription I give my patients when they ask, "How shall I clean my teeth?" I say "three minutes," and that is one of the best prescriptions I ever introduced into my practice. Teeth brushed in the usual way, for a half-minute or so, are never well brushed.

Dr. Ross: I will not say much except in regard to what Dr. Rosenthal stated, that he thought all of them could be taken into the mouth double the strength of their commercial form without injury. I differ with him. Some of them could, but I have taken some of them into my mouth in their commercial form, 100% strength, and I could not remove them too quickly for my comfort.

Now, in regard to what Dr. Kahlo says: I will cheerfully admit the manner of the experiments conducted by Dr. Hunt were very much more valuable to dentists. These experimenters were working along plain, simple bacteriological lines. I think these tests were better for showing the greatest efficiency of the washes. I agree with Dr. Kahlo when he says it is desirable to have the patients use distilled water; but while that is not an impossibility, it is far in the fields of improbability that you will ever get a patient to do it.

I thank the gentlemen for what they have said in a complimentary way about my paper. I agree with Dr. Patterson that my use of the terms "germicide" and "germicidal" is open to criticism. To be a germicide, an agent should not only destroy the vegetative forms of the bacteria, but also their spore formations. In my paper the terms "germicide" and "germicidal" were not intended to be taken literally, but to furnish a comparative meaning based on the results of the experiments under discussion. I do not contend that these germs would be killed, to the extent they were in the tests we made, in the mouths of the patients. The main value to be given to these washes is simply from the mental impression they give the patients, and the additional incentive to them to clean their teeth. They have something that tastes more pleasant than ordinary water, and they labor under the impression that they are really accomplishing more with these mouth-washes than they would with simple water. The antiseptic benefit is very slight. When it comes to the really valuable service, I think there is no doubt we must depend altogether upon the operative skill of the dentist.

◆

THE RATIONALE OF ROOT CANAL TREATMENTS AND FILLINGS.*

BY L. A. SALISBURY, D. D. S., CROWN POINT, INDIANA.

The subject I have chosen for this paper is of unquestioned importance to us all; it also is of such magnitude that a thorough handling of it is almost impossible in one paper. Our individual methods and beliefs certainly and materially differ, but the result that we wish to attain, that condition as nearly approximating perfection as possible, is paramount with us all. In looking up the literature of years back, I find that up to 1859 an exposed pulp was not removed, but was covered by a concave metal cap of gold or lead, placed before filling the cavity. This method is still in use by some operators, but proved very unsatisfactory, only a very small percentage of the teeth so treated being saved; cotton saturated in collodion was also used, with small success.

There always has been a great difference of opinion as to methods of destroying pulps and filling canals. As near as I can discover, Dr. Spooner, an American, was the first to use arsenious acid. The French dentists, and some Americans, used the white hot cauterizer; others used charcoal and arsenic, but why the charcoal I am unable to learn, but possibly for its ability to sweeten odors of decay and decomposition. Then came cataphoresis, a much-heralded method of removing pulps without pain; a large number of dentists parted with some of their hard-earned shekels, and the only benefit anybody derived was the jolly supply men, who cheerfully pocketed their 50 per cent. or more. I presume a sufficient number of cataphoric outfits could be gathered up in any city to make quite a conflagration. Then I think we all used the old standby, arsenic, with very satisfactory results, when used by competent hands, until the pressure method of anæsthesia was born, which method I am convinced has caused more suffering than any other one operation in dentistry, although I will admit that in some cases it can be applied satisfactorily and comfortably to a patient, as well as being a joy to the operator; but allow me to protest against the indiscriminate use of cocain under pressure for the removal of pulp or in hypersensitive cavities. I shall never forget about seven years ago; a smooth individual presented himself at my office with a wonderful discovery, which he had worked out as the result of years of study and labor, and craved a chance to demonstrate to me. At times we are all more or less easy; that being one of my easy days, I consented. The patient I procured was a young girl about 17, with the inferior sixth-year molars badly decayed and pulp exposed in each. I adjusted the dam, under his instructions on one of them; he then drilled out as much of the soft decay as possible, prepared a mixture of several drugs, and saturating a pellet of cotton, placed it over the pulp, then placed some soft vulcanite over it, took my automatic and proceeded to anesthetize the pulp. Taking about one hour and thirty minutes, and causing pain all the time, he succeeded in removing the pulp and filling the canals, assuring me that in 12 hours the tooth would be comfortable, and forever remain so. I placed arsenic in the other molar and patient departed. When she returned at the end of seven days, reporting that the molar that had been treated with the cocaine was still causing pain, I removed root-filling and found that quite a pronounced hemmorhage had taken place after the canals had been filled. I presume the pressure-anesthesia enthusiasts will say that in time the blood would have been absorbed. I doubt it. I am convinced that the tooth would never have become normal; as a result of the congestion, inflammation had set in. The molar that I had placed the arsenic in was crowned comfortably long before the other one was at peace

---

* Read before the Indiana State Dental Association, June, 1906.

It is the practice of a good many operators to use as high as a ten to twenty per cent. solution of cocain, and, as we all know, mucous membranes, owing to their great vascularity, absorb the drug with a great deal of ease, more so than other tissues; and also when inflammation is present the absorption is greater, therefore, when we use a high per cent. of cocain under any of the patented instruments manufactured for that purpose, or even under soft rubber, if the foramen of the roots should be enlarged to any extent, we do not know when to stop the pressure, and the result is that the alkaloid passes beyond the apex into the tissue at that point, inevitably causing trouble and annoyance, which cannot very well be avoided. It is claimed for the method that less time is needed; permit me to say that, in my hands at least, arsenic can be applied with a great deal more rapidity.

FILLING OF ROOT CANALS.

The proper filling of root canals is of vast importance to us all. I believe that gold is the very best material with which to seal the apex, but on account of the extreme difficulty of using it, it must be discarded in favor of an easier material or materials, that will practically answer the same purpose.

I am much in favor of using cement impregnated with a good antiseptic in all large and medium-sized canals, and the familiar chloro-percha and eucalyptol, aided by gutta-percha points in the smaller canals. I believe that every canal, no matter how fine, can be sufficiently enlarged with sulphuric acid and the Kerr spiral broach to allow thorough removal of pulp and satisfactory filling with either cement or chloro-percha.

As to putrescent pulps and the interesting features connected with them, I call your attention to a paper read by Dr. Buckley of Chicago, at First District Dental Society of the State of New York, December 12, 1905, entitled "The Rational Treatment of Putrescent Pulps and Their Sequelæ," published in the Dental Cosmos of May, 1906, in which ideas new to most of us all were presented in a very able and convincing manner. Permit me to quote from his paper his treatment of putrescent pulps:

"To my mind, there has been a needless discussion about the penetrating or non-penetrating power of coagulating agents in putrescent root-canals, for those of you who are familiar with the dental literature of the past know that some of the leading men of our profession have objected to the use of phenol, creosote, solutions of zinc, chlorid, etc., in the treatment of those cases, because they are "powerful coagulators of albumin." These drugs are here contra-indicated, it is true, but not because they possess this property; for when the dental pulp is undergoing or has undergone the process of decomposition, the proteid constituents or coagulable substances have lost their former identity, and new compounds with entirely different properties have been formed.

In selecting drugs to be used in the treatment of these conditions I have therefore eliminated the question of coagulation, and have selected drugs which I know, if properly used, will unite chemically with the intermediate and end-products of decomposition, converting them into odorless and non-infectious compounds, as well as destroy germ life. In this connection, we should remember that the putrescent condition has been brought about through the agency of micro-organisms by a gradual analytical process. and, as stated above, among the products formed which must be considered in the treatment are hydrogen sulfid, the poisonous ptomains (putrescin and cadaverin) and ammonia or derivatives, the latter gas being evolved from the further putrefaction of the last named compounds. It is well to remember also that fats are a class of end-products resulting from the putrefaction of proteid substances.

The main gases formed, then, are ammonia and hydrogen sulfid. Now, it will be necessary to dispose of these gases in order to hermetically seal the cavity—an object much to be desired; for by so doing we prevent the oral fluids from contaminating the medicine within the tooth, the medicine from escaping into the patient's mouth, and the tooth from changing color during the time of treament. It has been known for some time that formaldehyd (CH_20), a gas which occurs in commerce in a thirty-seven per cent. aqueous solution, and which solution is recognized by the United States Pharmacopeia of 1900 under the name of liquor formaldehydi, or formalin, will, with ammonia, producing urotropin, a solid, as, $6CH_20$plus$4NH_3$ equals $(CH_2)^6\,N_4$plus$6CH_20$. I believe, from a reaction which I have worked out, that formaldehyd unites with hydrogen sulfid, forming methyl alcohol, a liquid, and sulfur, a solid, as, $2CH_20$ plus $2H_2S$ equals $2CH_30H$ plus S_2. It is stated on good authority, too, that this same gas, formaldehyd, unites with basic ptomains, forming inodorous compounds. By the use of formaldehyd, then, we can change the irritating gases and poisonous liquids (largely ptomains) into non-irritating and non-poisonous liquids and solids. The official solution of formaldehyd, however, is too strong for general use; therefore, inasmuch as facts result from pulp-decomposition and are present as such in a putrescent root-canal, I selected tricresol (now also recognized by the U. S. Pharmacopeia of 1900 as "cresol") as the vehicle with which to dilute formalin. This agent was selected for three principal reasons: (1) It is miscible with formalin in all proportions, thus making a good pharmacal product. (2) It is a *good* disinfectant, much more powerful than phenol. (3) It acts chemically upon the fatty compounds, thereby disposing to advantage of these substances.

I shall now direct your attention to the details of a method by which I believe these conditions can be treated with the least inconvenience to our patients and to ourselves and in making this statement I wish it understood that I do not belong to that class of practitioners who are ever on the alert for something easy regardless of results; yet I am always ready and anxious to grasp any method by which the comfort of my patients can be conserved and their interest not neglected. This is the plain duty of every dentist, and is one of the reasons why gold and porcelain inlays are receiving the favorable recognition today which their value merits. The tendency of this age is toward simplicity in all things.

TREATMENT OF PUTRESCENT PULPS.

We will now consider the treatment of putrescent pulps. Our first duty here, as in all treatment cases, is to make a correct diagnosis, after which the rubber dam should be adjusted in every case where it possible to do so, and all the teeth included sterilized. For this purpose I either use a ten per cent. solution of formaldehyd to which a small amount of borax has been added, or a 1-5000 solution of mercury bichlorid in cinnamon water. After using one of these solutions the teeth are bathed in alcohol, when, with a large round burr, the pulpchamber is freely opened, exposing all of the canals, but making no attempt to remove the contents therein. Now on a small pledget of cotton, the following remedy is placed in the pulpchamber and over the mouth of each canal:

ORIGINAL FORMULA.

℞ Cresol.
Formalini ....aa f℥j. M.
Sig.—Use as directed.

It is always best to seal the cavity with a quick-setting cement, for the remedy should be hermetically sealed, and pressure must be avoided. This dressing can remain until you desire to have the patient return for a subsequent sitting. I prefer to leave it about two or three days. However, it can be changed safely the following day, and no harm follow if it remain a week or more. At the second sitting the dressing can be removed and the canals mechanically cleaned, when a 1:5000 solution of mercury bichlorid in hydrogen dioxid—suggested to me by Dr. M. L. Rhein, of New York, is gently worked down into each canal, after which the canals should be dehydrated with alcohol and warm air, and the modified formula placed on cotton in each canal, and the cavity again hermetically sealed:

MODIFIED FORMULA.

℞ **Cresol .... f℥ij**
Formalini .... f℥j. M.
Sig.—Use where indicated.

It is well to allow this dressing to remain for at least three days, by which time the remedy will have sterilized the entire tubular structure of the dentin, thus establishing asepsis. All that is necessary now to prevent recurring sepsis is to thoroughly fill the canals.

In the treatment of those cases where the patient did not present until the confined gases had been forced through the end of the root, carrying the poisonous ptomains into the surrounding tissue, it is our duty to try and aid nature in aborting an abscess. It is in these cases that good judgment must be exercised, and extreme care taken. There is no condition which we are called upon to treat wherein a practical knowledge of pathology and therapeutics will serve us better than in this particular case. Frequently patients delay coming to the dentist until the infection has progressed to a point where all remedies will fail in aborting an abscess; but in many instances this result may be prevented by the proper use of drugs. After hermetically sealing our remedy in the tooth, containing the putrescent pulp, as outlined above, our attention should be given to the treatment of the infected alveolo-cemental membrane. In order to control the infection, and at the same time aid nature in readjusting the abnormal condition, it is not only our privilege, but our duty in these severe cases to administer internal drugs. Here alterative drugs are indicated. The great representative of the alterative class is potassium iodid, which can be given in the following prescription:

℞ **Potassii iodidi .... ℥jss**
Syrupi sarsaparillae comp....f℥iij. M.
Sig.—Take a teaspoonful in water after meals.

The general directions should be to have the patient take a teaspoonful three times a day after meals, but in these cases of septic pericementitis or incipient abscess it is best to direct the patient to take a teaspoonful every two hours until three or four doses are taken, and then follow the directions written on the label. It is well also to avoid the accumulation of blood in the part. To prevent this, saline cathartics are indicated—one that can be given is the official solution of magnesium citrate, a prescription for which follows:

> **℞ Liquoris magnesii citratis........f℥xij**
> **Sig.—Take ½ at once, and the remainder**
> **in 2 hours, if necessary.**

I do not give the remedies here mentioned in all cases of incipient abscesses, as the local treatment will suffice in most instances. No therapeutist can tell exactly what internal drugs he would suggest without seeing the case and knowing the history, for there are many circumstances and conditions which modify the effect of drugs."

This is only a short extract from his paper. I would earnestly commend the careful reading of the entire article by every dentist.

THE INDICTMENT OF THE THIRD MOLAR.*

BY DR. HORACE WARREN, MISSOURI VALLEY, IOWA.

First—It is accused of being a superfluity to the masticating apparatus.

Second—Of being productive of much reflex pain.

Third—Of being a menace to the health and integrity of its fellows.

It is customary for practitioners to advise the removal of supernumerary teeth whenever found, unless they seem to be fulfilling some office. The third molar is rarely used to any appreciable extent, in the comminution of food. It is well known to dental students, especially so to prosthetic experts, that greatest activity is upon the second bicuspid and first molar, and the next in volume upon the second molar.

The third molar in the majority of cases does absolutely nothing in the trituration of food owing to the tenderness of the tissues surrounding it, as well as its location. And I believe in many instances its presence and consequent tender gingival margin militates against the vigorous, strenuous action of the mandible, which is considered so necessary a predecessor of good digestion.

---

*Read before the Nebraska State Dental Society, 1906.

Then the patient is forced to live upon milk toast or breakfast food. You have all had the experience of attending some pale, sickly, ænemic child, suffering with stomach and intestinal indigestion caused by diseased teeth on both sides of the jaw, thus preventing the grinding of the food and therefore permitting the passage of it into the stomach in a condition unintended by the economy. You all know that food so swallowed, even though it be ground artificially before being taken into the system, is not mixed with sufficient saliva to bring about the correct action by the digestive apparatus.

Now, a third molar will frequently foster this very inertia in a mouth that is apparently well cared for by both dentist and patient. Perhaps these are not sufficient reasons for advising their removal, for we are only dentists, you know, and should not trouble ourselves about such a minor question as indigestion.

Well, let us see if the matter of pain that they produce is any factor in the argument for their untimely taking off. The reflex pain that the third molar causes is something of which the medical practitioner is woefully ignorant, though a lack of knowledge in the premises on the part of the dentist is much more reprehensible than that of the physician. But, alas, many, and I believe the majority of our brethren, fail to recognize the fact that a very large portion of the pain (perhaps I should not say majority) conveyed by the trigeminal nerves is produced by these miserable barnacles of the oral cavity.

Who is there before me who hasn't been called in consultation by the attending physician to the bedside of a suffering patient to suggest some relief from excruciating pain produced by an impacted third molar? Did any other tooth ever take you on such an errand? I guess not.

REFLEX PAIN FROM THIRD MOLAR.

Many years ago a physician presented himself after suffering the "agonies of the damned," as he expressed it, with extreme pain at the base of the brain and darting down the spinal cord, he said, and he wished to know if there were any of his teeth that were decayed; seemed to him as though there must be an exposed pulp. Examining his teeth carefully, I found absolutely no evidence of decay or pyorrhea, acute or chronic. But the two lower third molars were up against the second molars good and hard, knocking to get out; and they knocked very strenuously, as they have had a habit of doing for several years. I answered their call with the happy result of the instantaneous cessation of hostilities, something I never promise a patient, for the results are not very rapid, usually, for it is treating cause instead of symptoms to extract third molars for reflex pain.

TRIGEMINAL DISTURBANCE.

The third molars, and especially the lower ones, cause a trigeminal disturbance remarkably similar to that produced by an exostosed upper molar, the principal points of similarity being the difficulty in locating the cause.

Over twenty-six years ago I had an experience which has been repeated many times since. A patient asked to have the right upper first molar extracted for an excruciating, aggravating toothache, as she described it, which had prevailed for several days. A very careful and searching examination failed to disclose any lesion in the first molar, but the lower left third molar had recently erupted and the surrounding tissues were not in an exactly normal condition. The extraction of the third molar caused the abatement of all pain, however; she still has the right upper first molar.

Now, there is nothing extraordinary about this case. Many and most of you have had this same experience, but in view of this fact of the meddlesome disposition of the third molar, which is so patent to a diagnostician, I can't understand why they are not more generally condemned.

FILLINGS IN THIRD MOLARS COMPARED WITH SECOND.

You are all well aware that, given two cavities of equal magnitude, one in the first or second molar and one in the third molar, the third molar is much more liable to give subsequent trouble from death of the pulp, and the filling is more likely to fail.

Why, probably because the recuperative powers of the third molar, usually a runt, so to speak, are low and the filling fails for several reasons.

The quality of the tooth is generally poorer than its mates; it is in such location that it can not be kept nearly as clean as it should, and it is not used enough to prevent decay. On account of this peculiarity of third molars to reflect pain, their presence in the mouth often makes it very difficult to diagnose and locate dental pathological conditions.

Now, if sufficient reasons have been adduced for "Oslerizing" the third molar, why should we allow a patient to retain it with the great probability of its presence and proximity to the second molar being the cause of a cavity forming eventually on the distal surface of the latter useful tooth? Some one may say this point is untenable because it might be applied to any tooth to save its fellow. It may apply to any tooth which is useless as the third molar, to be sure. Many times have I plead with patients to have the third molars extracted, without avail, when they would return after many days with a great ugly cavity in the distal surface of the second molar and the mesial surface of the author of the crime.

Now, you are up against a real dental problem. Save that second molar without removing the third molar. Oh, yes, you all fill "at" them, but you don't save them without crowning them eventually; whereas, the timely removal of that leprous third molar would have prevented all further trouble in the premises, and thus would have been a practical demonstration of the most effective prophylactic measure imaginable.

I hear some one saying to himself that they serve an excellent purpose as an abutment for a bridge when the others are lost. To be sure, old, decrepit men, and women, too, are pushed into battle, sometimes, when the able-bodied men are all gone. Now, let us analyze the workings of the human mind in arriving at a conclusion to advise their retention. The meanest reason is the sordid one. If a man has entered dentistry for the same reason that a man goes on to the stock exchange, then there is no answering argument, but if he is in the profession to do mankind some good, and not "do" the patient, his advice should be, when a patient presents with a cavity in a third molar and the first and second intact, to have it removed.

The conservative operator will say that it should be reserved because nature placed it there for some purpose, and we should not interfere with nature by the ruthless extraction of a sound tooth. Forsooth, what would these men do with the vermiform appendix? And yet the third molar, while it is not the menace to life that its partner in crime is, it is a great disturber of peace and happiness and oral tranquility, and certainly, in many cases, it is like unto living in the shadow of a volcano to have one in the mouth.

WHY MANY ADVISE THEIR SALVATION.

Now, the reason that some practitioners advise their salvation is, I am satisfied, though none ever admitted it to me, because they do not wish to undertake their extraction. As we all are aware, it requires more skill to extract the lower third molar than any other tooth in the oral cavity, and any one who extracts very many of them feels sometimes that he does not know much about it.

DIFFICULTIES OF EXTRACTION.

There are some difficulties in the way of extracting them without considerable pain. It is not considered advisable to do so under a constitutional anesthetic (though I would not hesitate to do so, generally), because the position of a patient under chloroform or ether is an undesirable one for the skilful manipulation of a third molar; and again, more than one third molar has slipped down instead of up and lodged in the traches or esophagus.

And again, the practitioner who is afraid of a reputation for producing pain would better avoid extracting lower third molars as far as possible, for the reactionary pain for several days may be such as to sadly shatter the good name of one who poses as the "easy dentist." Injections of cocain around a lower third molar, while they may be effective in making the operation painless, are much more productive of cardiac depression than those around any other tooth.

A CONDITION THAT CONTRAINDICATES EXTRACTION.

There is one condition wherein it is not well to extract the third molars, viz: When the added diameters of the teeth do not equal the space in the jaw allotted to the teeth, and therefore they have a tendency to separate. Such teeth are not apt to decay much, and the third molars may help to hold them in their original positions.

CONSCIENTIOUS PERFORMANCE OF DUTY.

Now, several reasons have been shown why third molars should not be saved, and also several disagreeable circumstances which may attend their removal. And over against all these, but one thought to compensate one, which is, the conscientious performance of duty. If we are not content to do that, without reference to the pecuniary consideration, then would we better enter into the real estate or Standard Oil business and secure some game worthy of our steel (or steal).

DISCUSSION.

Dr. H. T. King, Fremont: It was to be expected that Dr. Warren would bring a strong indictment against the third molar, and I am ready to endorse what he has said if applied to some of them only. Hardly think it fair, however, that he should pose as both judge and jury, and for the shortcomings of a few bring an indictment, try and condemn to immediate execution all of this particular class of teeth.

I have the care of many mouths from which I am sure the loss of the lower third molar would prove a very great one to the individual. For instance, take it in case of loss of first molar; even if the second and third do not move forward, as we know they sometimes do, the indicted third molar is of very great value in masticating. This is true even when there is no antagonizing tooth, for the function it performs in assisting to hold foodstuff on masticating surface of second molar is worth the amount of trouble it usually takes for its preservation. If any of you are trying to masticate on a poor lone molar, you can better appreciate this than can Dr. Warren, who has his full complement of teeth (less third molars, of course). These he has "brushed before breakfast" so very many years now that he knows none of the dental ills that others have. Why he does not apply his panacea to the indicted third molar, I do not understand.

We all see many third molars that, on account of size of teeth or smallness of arch, are so placed as to make their own environment and that of neighboring teeth such that caries will develop and be hard to control. It is probable the malposed tooth should be extracted. But is there any tooth in the arch that at times is not out of true position, giving us the same predisposing cause for dental decay?

If I heard aright, the paper makes the point that the distal surface of second molar will be safer from caries if the third is removed. True, so will the distal surface of first, if second molar be removed, and so on around the arch.

Let us think a minute. Is it true that in well-placed third molars we find more cavities than in other teeth? I do not remember the statistics, but from my own clinical experience, I am willing to assert that the percentage of decay in upper third molars is less than any other tooth in the arch, and that the same is true on lower jaw, if we count out the six anterior teeth.

Further, is it true that in mouths we have regular care of, it is more difficult to control the decay? I do not think so, and would not condemn a tooth because it is inaccessible and hard to fill.

The Physick forcep seems to be the favorite instrument for the removal of the tooth in question. To my mind, there is an element of danger in its use, and being able to get along nicely with the ordinary forcep and elevators, I do not use it. Just in proportion as the third molar needs to be extracted, does it present difficulties in its removal. If you place the beaks of the Physick between the second and third molars and close the handles, with the leverage obtained something must give away. In two instances I have known this to be the second and not third molar. One of these was a tooth covered with a gold crown, for which the patient had, three weeks before, paid $20. Most patients dislike to lose a sound tooth, and when you take one by mistake in which good money has been invested, the story of its loss will circulate through the community world without end.

I like the paper because it is radical, and it is the radical man, in other words, the crank, who makes things move in this world. Notwithstanding the arguments presented, however, I prefer to allow Dr. Warren to do the systematic moving of third molars.

Dr. Norman H. Morrison, Red Cloud: I have been much interested in this particular paper, as it calls to mind some decisions I have made in regard to condemning third molars, but without any particular authority for them. After listening to such a carefully prepared paper, making apparently such broad and sweeping statements, yet careful to back them with logical reasoning, showing that the essayist has given his subject due consideration and arrived at his conclusions not hastily, but by careful observation of the true conditions as he has found them, and as all have found them, if they have been observant. I feel that I now have authority for some of my decisions in the past and that I have not been too radical.

As to the third molar being a superfluity in the masticating apparatus, I have seen a number of instances where it was not, but was a valuable and peaceful member, yet many have been the times I have seen them when they were superfluities productive of much pain and a menace to the health and integrity of its fellows, and in such cases I deem it the duty of every conscientious dentist to advocate their speedy removal, and when they are sound and peaceful, very accessible, so that the patient may properly cleanse them, I deem it the duty of every dental surgeon to guard them with jealous care and give them proper consideration in cleaning at all times. It is true that many third molars have been retained and have done valuable service long after the second or even the first molars have been extracted, and perhaps were supporting one end of a large bridge, yet, as Dr. Warren has shown, it may have been the cause of the loss of the other molars, and by pressing it into active service you have re-established its masticatory function, it is no longer a supernumerary, and its surfaces are immune from decay because of the function necessary to its excessive use.

Dr. W. F. Roseman, Fremont, Neb.: If Dr. Warren thinks he is going to get up a scrap with me on his indictment of the third molar, he is decidedly mistaken. During all my years of practice I have found, in 19 out of 20 cases, the third molar an intolerant nuisance, often decay taking place before they are erupted, their influence extending to sound teeth. Then, again, I have found it necessary to extract them in order to relieve the patient of severe pain in the jaw. Like the fifth wheel to a wagon, I feel they could be happily dispensed with, benefiting both patient and operator. The sentiment of the paper I most heartily endorse.

◆

COMPILATIONS

STERILIZATION AND DISINFECTION AS RELATED TO WATER, INSTRUMENTS AND SOFT TISSUES, INCLUDING PUTRESCENT PULPS.*

BY A. W. HARLAN, M. D., D. D. S., NEW YORK, N. Y.

Any supposed potable water may contain large numbers of bacteria, that are harmless, but if there are two or three to every litre of water, that are pathogenic, then we need precipitation and sterilization.

HOW IT IS ACCOMPLISHED.

If you will take a copper boiler or pot and have the interior thoroughly polished and leave the water standing in contact with this surface for three and one-half hours, the various substances floating and dissolved in the water will be precipitated, in consequence of the solution of a small portion of the polished copper surface. This will not affect the taste, but the water will be sterilized. If the water is then filtered it is ready for use. When we want to sterilize water quickly we take a copper coil, place it in a jar or pitcher of water and turn on the electric current, and in ten minutes we will have copper sterilized (boiled) water for use at the chair or elsewhere.

STERILIZATION OF INSTRUMENTS.

This is a certain method and not injurious to your hands or the instruments. Many methods of sterilizing instruments are in use just as there are many ways of disinfecting the hands. A pint of copper-sterilized water is placed in a glass dish, add five grains of dried sodium carbonate and immerse the instruments (which have been scrubbed with a sterilized brush in sterilized water) for five minutes, and then rinse them with copper-sterilized water in a second dish, and dry them with cotton cloths that have been heated to 350° F. and place in a covered glass dish, and they are ready for use.

---

*Read before the Odontological Society of Chicago, March 13, 1906.

The paper or cloth covers for the operating table may be sterilized with dry electric heat in a suitable sterilizer operated with a small electric cooking oven. It is understood that the office girl will scrub her hands in liquid soap or green soap and rinse them in diluted alcohol before rinsing the instruments. This will require only a stock solution of one ounce to the pint of copper sterilized water. All of the solutions used around the chair can be made with sterilized water. In all cases it should be filtered through clay or some other approved substance to remove the precipitate. It has been found that one part of colloidal copper will sterilize 8,000,000 parts of water, so there should be no need of the fear of being poisoned with dissolved copper.

DISINFECTION OF ORAL TISSUES.

All of the soft portions of the mouth, gums, tongue, lips, cheeks, palate, may be disinfected by using a carbonated copper water to which is added $\frac{1}{2}$ gr. to the ounce of dried sodium carbonate, large pellets of cotton wool, previously sterilized, are used to swab the mouth; these are carried with large, flat, wide, pliers made of copper, polished after using, so as to be ready for the next case.

DISINFECTION AS RELATED TO DECOMPOSITION IN AND AROUND THE ROOTS OF THE TEETH.

We are told that we can disinfect with sodium dioxide with kalium-natrium (potassium and sodium) with 1 to 500 or 1,000 of bichlorid, with cresol with iodin and sodium iodid and water, with formol—with formalin and cresol, to say naught of many other substances. Why, there are persons who think even now that they can disinfect with zinc chlorid when it has been known that any pus-producing spore will live in a saturated solution and come to life just as soon as he is planted in a suitable medium for growth. Do you wonder, then, that we are only beginning in our knowledge of root infection, of infected and poisonous substances from decomposition of animal tissues? Much confusion exists on this subject in the minds of those who get all their information from supposed chemical reactions taking place within a pulp chamber during the process of decomposition of the pulp. When we consider that cadaverin has the formula of $C_5 H_{14} N_2$ and neuridin has $C_5 H_{14} N_3$, and putrescin $NH_2 CH_2 (CH_2)_2$, $CH_2 NH_2$, $C_4 H_{12} N_2$, and acetic acid $CH_3 COOH$, to say nothing of indole, cresol, skatole and other substances too numerous to mention, is it wonderful that mistakes are made? All of these substances, and even others, including phenol itself, are to be found in the decomposed pulp and they are to be reckoned with as the final end products of decomposition of the pulp. Pin not your faith to any universal destroyer of mephitic gases and odors, and the poisonous by-products of these numerous decompositions and redecompositions.

If you can first cleanse the solid alkaline and amino-acid products of decay from the pulp chamber and then attack bacteria and their spores you are more certain of complete disinfection than to depend upon a gas destroyer alone to modify them. With these brief remarks I will present to you in a condensed form my own observations: The complex and elusive substances which we are to combat, in some cases are transitory. They vary in quality, so that we are unable to fully estimate the virulence of the infection. This will explain why there may be failure at times to disinfect. Hence, we are compelled to overwhelm not only the organisms and spores, but the multifarious end products of decomposition. Many of these are soluble in water, so that is the hint for the first step in disinfection.

Disinfection necessarily implies infection. For our purpose tonight we will confine our remarks to a consideration of the effects of decomposition within the root of a tooth or around it. The effect of the retention of decaying and decomposed pulp tissue on the dentine and cementum of the tooth is to poison them, and if any of the products of decomposition pass through the end of the root, there is irritation, inflammation, and usually suppuration. This is what we wish to avoid.

I need not describe how or why a pulp dies; we find it dead when there is decomposition in the root. (Very rarely is any portion of the pulp alive when there is decomposition in the root). In this decomposition we have H_2S and NH_3, two gases which will produce pressure and give pain to the surrounding tissues, including the whole organism, unless there is an outlet provided for them. You are all familiar with the pain produced by a forming abscess, which is usually presented to you at an inopportune time. To convert ammonia and hydrogen sulphid into a solid or liquid is said to be the surest and most certain method of disinfection. The alkaloids, putrescin, cadaverin and neuridin, being solids, are not acted upon directly by drugs except to withdraw the nitrogen. These alkaloids are soluble in water, so that care should be exercised to not use peroxide of hydrogen or liquids to force them through the apex.

TO RENDER GASES INERT.

Many methods have been proposed to render gases inert. Buckley uses formaldehyde and cresol. I have found that a crystal of mono-chloro-acetic acid will do this. In all cases of putrescence within a pulp chamber or root canal, by first isolating the tooth and washing its interior carefully with copper sterilized water, then partially drying it, I place a crystal block of the acid in the center of the pulp chamber, and if there is not sufficient moisture, a drop of sterilized water is added. Within five minutes the tooth may be sealed hermetically with cement.

I prefer a quick-setting cement, mixed soft. Ames' special inlay cement is good, or Justi's No. 2. Leave this tooth alone for a few days and open it under antiseptic precautions. This means to not allow saliva or hydrant water or an unsterilized broach or instrument to enter the root canal or go through it to push any foreign matter into innocent tissues. In this process, if the tooth were discolored it is bleached at the same time that the disinfection is being accomplished. By this method we only generate a gas to break it up and make oxidizing agents of the gases of decomposition and the numerous animal alkaloids present within the tooth.

For more than seventy years we have been groping for some drug that would control and minimize gaseous production during the putrefaction of pulp tissue. This will do it and at the same time hold the color of the tooth. You do not need to be changing the dressing every day or two, for it is not needed. The worst case of putrescence will yield after two treatments at intervals of one week. If there is a blind abscess at the apex of the root, it must be drained and washed with sterilized water and a crystal of the acid introduced and sealed into the cavity to remain for a week or even longer. After these dressings are removed and the roots are washed with sterilized water and dried, they are to be filled to the apex if possible. (You may use this acid in 10 per cent. solution to inject through the root and the fistulous tract leading to the surface of the gum).

DISINFECTION AROUND THE ROOTS OF TEETH.

In all cases of suppuration of the sockets (not mercurial or syphilitic) it is necessary to disinfect the mouth first of all. Second, to remove all deposits from the roots of teeth, including the perceptible edges of necrosed bone. The sockets are to be deluged with cleansers first, and then every pocket (where there is a pocket) is to be burned with some destroyer of tissue—lactic acid, trichloracetic or monochloro-acetic acid. I prefer the latter, as it will destroy that sickening odor that we find exhaled from the mouths of pyorrhœa patients. After teeth are treated in this manner they should be left alone. It is suggested and urged and commanded that teeth should be lashed together or bolted with staples or banded or held with bridges or fixtures so that reparative processes will not be interfered with. After all, is it not logical to insist on the mouth being kept clean, and the patient's system flushed with water to wash out the auto-intoxicants and give the tissues an opportunity at the ends of the arterioles to build new supports for loose teeth? If you destroy the local causes of decomposition and obliterate the pockets, even though you lose some useless gum tissue, the patient is the gainer and he saves his teeth for daily use, and is free from suffering every time he tries to masticate solid food.—*Abstract from Dental Review.*

RETENTION OF ARTIFICIAL DENTURES.

We cannot go deeply into this subject, for it would require sufficient space for a chapter in a text-book; but we shall state enough for studious minds to grasp the thoughts and trust they will carry them to a logical conclusion.

First: What are the objections to these patent suction forms? (a) They are made of a material that is soon destroyed by the fluids of the mouth; (b) the material and its form is very unhygienic, the most so of anything we use in the mouth. Within a few months, flexible vulcanite will become saturated with the oral fluids, and if the patient neglects to change it often, it will not only add its peculiar offensive taint to the breath, but the increased bulk of the diaphragm will interfere with the retention of the denture; (c) Dr. Haskell says: "The serious objection to the patent suctions so extensively used is that they necessitate using the vulcanite plates for permanent work; and mischief enough has already been done with this material, as appears from the thousands of flat, ridgeless jaws." (d) The necessarily thickened plate. (e) Last but not least is the effect the general use of these suction chambers have upon the prosthetist. Their general use will tend to make us a stereotype mechanic. All cases will look alike to such an one. We should study and diagnose each case; if we do not, we are in truth dental mechanics.

Second: What are the conditions of the mouth that are favorable and unfavorable for retention of artificial dentures? (a) Size: All things being equal, the larger the jaw the greater the retention. (b) Shape of the vault: A very high sharp-peaked vault or a very flat one are unfavorable, while a medium high oval vault is the most favorable. Of the four conditions of the mouth we are now considering, the shape is of the least consequence. (c) Soft tissues: The soft tissues require careful consideration, for they are very important. We may have a thin tense mucous membrane over the whole jaw. This would be the logical place for use of a flexible suction chamber. We may have an excessive layer of soft tissues over the whole jaw. In this case a flexible suction chamber would be a positive detriment. And then we may have a variety of combinations of the tense and flabby soft tissues. In these cases the skilful experienced man will render better service without flexible suction chambers; although they may be used with *apparent* success. (d) Fluids of the mouth: The fluids of the mouth are of equal importance with the condition of the soft tissues. If the fluids are normal as found in a healthy young person, they are most favorable for adhesion by contact; but if the fluids are thick, viscid and dropsy, they are most unfavorable.

Thus a most unfavorable case would be, a small jaw with either a high-peaked or flat vault, covered with a thick layer of fissured soft tissue and bathed in an excessive amount of thick, viscid, ropy secretions. If the patent suction chamber would help in these most unfavorable cases they would indeed be a blessing; but they will not.

There are other factors that must be considered in diagnosis and prognosis. We will name them, but not discuss them. Relation of the jaws to each other (leverage). State of the general health. Temporary exhaustion. The ability of the patient to adapt himself to environments. The mind of the patient must always be taken into consideration.

Third: What is the philosophy of retention by a flexible suction chamber?

Full upper dentures are retained by two forces. First, atmospheric pressure, which is caused by a cavity in which there is a partial exhaustion of the atmosphere. This force exists only so long as there is a space in which there is more or less rarified air. As soon as the space is filled with soft tissue and the fluids of the mouth, atmospheric pressure ceases; and the second force, adhesion by contact, is the retaining force. These forces must not be confused with each other, because they are entirely different. Atmospheric pressure always implies a cavity from which the air is partially exhausted. Adhesion by contact means absolute contact. Thus, if we take two flat, smooth pieces of glass and place them together we would not have adhesion because there would be a slight film of air between them, but if we moisten the surfaces and press them closely together we will have considerable adhesion. This is not atmospheric pressure because by the hydrostatic law the air pressing upon the periphery of film of water distributes the pressure in every direction; thus the glass plates will be held together by the strength of the film of water. As attraction and repulsion are nearly equal in water the thinner the film the greater the attraction; consequently the thinner the film of water, the stronger will be the attachment of the glass plates.

Let us apply these principles of physics to the soft rubber disk. We assume the rubber has been well vulcanized and is not of itself sticky or adhesive. We can readily see how it is much easier to get absolute contact with velum vulcanite to an uneven hard surface than it is with hard vulcanite. We also see that the adhesion by contact of the soft vulcanite is not very strong, because one portion of soft vulcanite gives but little support to another, while a rigid material does. When traction is applied upon the center of the disk it yields without displacing the periphery of the disk; but we have produced a new condition under the center of the disk, a vacuum; thus we have atmospheric pressure, suction, real suction with its attendant evils upon the soft tissues underneath the disk. We have more than this, we have displaced the plate slightly from the rest of the jaw, and it simply hangs suspended. When visiting the supply house again, take their sample base plate and suction form and study its action upon the glass model.

Fourth: Why do dentures not adhere better? (a) Because the case is not properly diagnosed. (b) Because of imperfect manipulation on the part of the dentist. (c) Because the patient has not the ability to adapt himself to the best conditions the dentist can produce. (d) There are a few cases (probably) that our known methods are not equal to the demands. (e) There are some cases, which, because of the incompatible natures of prosthetist and patient, make it impossible for the operator to produce his best work, and for the patient to cooperate. Such patients would probably meet with satisfaction at the hands of another, though a less expert prosthetist.

We must say a few words upon division *b* of this fourth class. There are few men who take a really good impression. This subject will well repay careful study. Most of the misfits that occur in vulcanite work, after a perfect impression is obtained, are due to faulty packing and closing the flask. It is a mistake to attribute our failures to the materials used; it is rather our improper use of them.

Our young friends must not be discouraged, but persevere, and they must not think any man has mastered all the problems of prosthetis, because they have not; but by observation, study and hard work they have gained valuable experience.

We trust we have said the right word to help our young friends with these knotty problems, but if it is not clear we shall be happy to answer, so far as we are able, any questions asked by a seeker after truth and knowledge.—*Dr. G. H. Wilson's Editorial in Dentists' Magazine.*

SUGGESTIONS

EXTENSIVE BRIDGES.

Hart J. Goslee, Chicago, Ill.

Because of the shrinkage of solder, and of the fact that it is not always possible to entirely overcome or control it, the assemblage of extensive bridges involving nearly all of, or the entire denture, may invariably be best accomplished by first dividing them and investing and soldering in sections, and then subsequently uniting the sections.

In cases, for instance, which extend from the molars on one side to those on the other, if soldered all at one time the shrinkage may be so great, owing to the curvature, as to preclude the subsequent adjustment of the piece to its position in the mouth. Indeed in such cases this will be the usual result unless proper precautions are observed.

After the assemblage on the model, however, if it be divided at the median line and each lateral half invested and soldered separately, no difficulty will be experienced. Each piece may then be finished, and adjusted to position in the mouth, when an impression in plaster should be taken. This should be filled with investment material and the model obtained, after which it may be trimmed small and invested, and the two pieces then united in the center, when it will be found that they will go readily to place.—*Items of Interest.*

GUTTA-PERCHA AS A MOUNTING MEDIUM FOR BRIDGE WORK.

Hart J. Goslee, Chicago, Ill.

The use of gutta-percha as a mounting medium for all types of fixed bridge-work is becoming more and more general in proportion as its advantages are recognized, and its manipulation is mastered, yet in its present form it is doubtful if it will soon, if ever, entirely supersede cement, or if it offers the same opportunities for permanency.

The advantage offered by this form of mounting lies mainly in the comparative ease with which the bridge may be subsequently removed in the event of necessity, and without injury to the abutments, supplemented by the relief afforded to the porcelain part on account of the more cushion-like effect obtained because of its possible elasticity as compared with cement, and by the absence of any cause for irritation since no surplus, outside of the actual requirements, need obtain.

In the application of gutta-percha as a mounting medium, the ordinary pink base-plate material seems to offer the greatest opportunity for permanency, because of its inherent toughness and integrity. In its use it should be cut into small narrow strips for dowel crowns, and small square pieces for telescope crowns, and as it can only be manipulated at a temperature which will admit of ready and accurate adjustment, these should then be placed on a smooth surface of hot iron, or of some heating device which avoids contact with the flame, until the greatest possible plasticity is obtained.

When the piece involves a dowel crown, if the dowel is smooth its sides should first be serrated or roughened with a sharp cutting instrument, and then moistened with oil of cajaput, or eucalyptus, as a means of obtaining attachment thereto, and one of the plastic strips then coiled around it and molded to closely follow its form with the fingers. The bridge should now be placed upon the heating device and allowed to remain until this is again plastic, when, after moistening the canal with water from a small syringe, or some essential oil, to prevent the gutta-percha from adhering thereto, the bridge should be forced to place.

This procedure should be repeated until enough of the material to completely fill all of the space between the crown or abutment piece and the root has been added, and no surplus, beyond this, remains, and the same procedure should then be repeated for the telescope crowns excepting that in this type of crown the small square pieces are used instead of the strips, and these are placed in the cusps and around the band, the surfaces of which should previously be roughened or serrated with a sharp instrument.

When a sufficient quantity of gutta-percha has thus been molded into each abutment piece *separately*, the bridge should again be placed on the heater, and the abutments then dried with alcohol, and subsequently moistened with a thin solution of gutta-percha in cajaput or eucalyptus, when the piece may then be finally forced to place.

This solution is used as a means of facilitating a more secure attachment of the gutta-percha to the roots, and may be easily made by first dissolving the material in chloroform — which is a more ready solvent — and then gradually adding the cajaput or eucalyptus as the chloroform becomes evaporated until a stable solution of the proper consistency obtains.

Because of the refractory properties of base-plate gutta-percha, and in order to overcome this, and thus simplify the manipulation various so-called "gutta-percha cements" are now manufactured and more or less extensively employed, and the outfit of this kind suggested by Dr. Geo. Evans, is very complete. Although such preparations may be found useful, still the increased plasticity and a possible shrinkage makes the permanency questionable, and therefore, since it is these same refractory properties which enchance the value, and insure the maximum integrity of gutta-percha as a mounting medium, the best and most permanent results are doubtless to be obtained from its use in the manner indicated.—*Items of Interest.*

CARE IN THE USE OF SILVER NITRATE.

Otto Holinger, Chicago.

In the use of strong solution of nitrate of silver it is necessary to neutralize any of the solution which escapes from the confines of the area intended for its reception, for nitrate of silver solutions, except the very weak ones, are escharotic.

For that purpose I am in the habit of flushing out the mouth with a solution of common salt, say 50 per cent., but most any strength will do. In that way the insoluble silver chloride is formed.

Silver chloride when dry has a sandy consistency, so that it should be well washed out of a cavity.

But for erosions or exposed surfaces, where the silver nitrate must be limited, I am in the habit of using the stick, or "lunar caustic."

Another combination of silver nitrate is that with iodine, forming the insoluble, soothing iodide of silver.

This is done by first applying tincture of iodine liberally over the gums and about the teeth, but not in the cavities, for the teeth will become discolored; then apply about a 10-per-cent. silver nitrate solution immediately on a small swab and follow this with some more iodine, which prevents any free silver nitrate remaining, and although there is a surplus of tincture of iodine, yet that is quickly washed out and is only irritating. This application I use very frequently, especially after cleansing the teeth and all infectious conditions of the gums and oral cavity.—*Dental Re-*

OLD MODELLING COMPOUND.

G. G. Brown, Cameron, Mo.

Warm up your old modeling compound and roll out in thin sheets on glass with large bottle. Makes excellent base plate for taking bites.—*Western Dental Journal.*

WHY PORCELAIN CHANGES COLOR IN FUSING.

G. W. Cook, Chicago.

The changing of the color in the mass, to my mind, is due more to the movement in the molecules in the mass than it is to the burning out, and when the temperature is raised the molecules are changed and the coloring matter sinks or gravitates toward the center under high pressure, the tendency of the mass being to globulate. This is true of changes that take place in the inorganic world.—*Dental Review.*

TO REMOVE WAX FROM UTENSILS.

G. G. Brown, Cameron, Mo.

When pans or wash basin gets waxy, clean with kerosene.—*Western Dental Journal.*

CAVITY PREPARATION FOR ABRADED INCISORS OR CUSPIDS.

T. P. Hinman, Atlanta, Ga.

The gold inlay is especially useful in the treatment of abraded or badly decayed incisors and cuspids, where there is a direct occlusion, because of the great resisting power of the gold used to make the inlay.

The cavity preparation for the incisal surface of the laterals, centrals and cuspids is the same where these surfaces are abraded and cupped out, and the enamel walls are sufficiently strong to be allowed to stand.

Examine the tooth to be inlaid very carefully and be sure that the enamel walls are not fractured, as such a cavity is not contemplated under this head, but will be described under another.

Excavate with a square fissure bur, cutting away the dentine to a depth sufficient to give a firm seat for the inlay, leaving the enamel walls standing. If the pulp is nearly exposed so as to preclude a sufficient excavation for anchorage, it has been my plan to cut two deep grooves on the floor of the cavity on the mesial and distal ends. This serves as anchorage, allows a reasonable proportion of dentine to be left over the pulp, yet gives secure seating for the inlay. This is a much quicker and more satisfactory method than the use of platinum or iridio-platinum pins for retention. — *Items of interest.*

COCAINE AS AN ANESTHETIC.

G. F. Ambrose, Eldorado.

My idea of a judicious use, would be a weak solution — one or two per cent. The former, if much is to be used. All the early formulas had four or five times too much cocaine. One grain of cocaine in a one per cent solution is less apt to cause trouble than one grain in an eight or ten per cent solution. As far as possible I avoid injecting it in an inflamed and ulcerated gum. When this is done more pain is produced than is overcome. And the most important thing of all when used hypodermically, is to have your solution, syringe and needle in a thoroughly sterile condition. When this is done the sloughing, sore gums will not be very much in evidence. A one per cent solution containing one drop of carbolic acid to twenty or thirty drops of the solution will prove satisfactory. If many teeth are to be extracted it might be well to use a heart stimulant.

But I do not indiscriminately urge its use in extracting. I make no hobby of it in extracting. If my patients want me to, I generally use it. If they do not request it, I usually say nothing about it. But when used with care and discrimination it commends itself to our consideration. — *Western Dental Journal.*

TO DEODORIZE PUTRESCENT PULP.

H. E. Davis, St. Joseph, Mo.

In opening a tooth with putrescent pulp, where the odor is something terrible, just apply to the cavity a small pledget of cotton previously dipped in Terebene and the offensive odor will change to that of attar of roses.— *Dental Review.*

LIQUID FLUX.

H. E. Davis, St. Joseph, Mo.

The best liquid flux that I have ever used, which I compound myself and find it ever ready and faithful, is:

Boracic acid.	
Borax aa	oz. ss.
Ammona muriate	grs. XII.
Pot carb.	grs. V.
Aqua dis. q. s	IV.

It will keep indefinitely and can be used on any metal for hard soldering. It should not be used, however, in connection with porcelain.— *Dental Review.*

USE OF COMPRESSED AIR.

Georg Zederbaum.

There are many uses for compressed air. One use is to dry your hypodermic syringe needle and keep it free from obstructions. Compressed air will do this; insert your needle point into the nozzle. You can put some vulcanized rubber over the nozzle and it will blow it right through. — *Dental Register.*

SOCIETY

BANQUET TO DR. G. V. BLACK.

The Fraternal Dental Society, and the St. Louis Society of Dental Science, will unite in giving a banquet in honor of Dr. G. V. Black, at the Jefferson hotel, St. Louis, the evening of January 15, 1907. The afternoon of the same day Dr. Black will deliver an illustrated lecture on some phase of operative dentistry.

The long and untiring efforts and valuable scientific contributions of Dr. Black easily make him the foremost dental scientist the world has ever produced. No dentist, living or dead, so much deserves the thanks and praise of his professional associates. A most cordial invitation is extended to the members of the profession to be present at both lecture and banquet and assist in honoring Dr. Black. Those desiring covers reserved for banquet will remit $5, price per plate, to Dr. Richard Summa, Secretary, Oriel Bldg., St. Louis, before January 12.

GEO. A. BOWMAN, Chairman;
A. H. FULLER,
EDWARD H. ANGLE,
D. O. M. LE CRON,
ADAM FLICKINGER,
WM. CONRAD,
BURTON LEE THORPE,
Committee.

INDIANA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Indiana State Board of Dental Examiners will be held in Rooms 11 and 12, State House Indianapolis, January 8 to 11, 1907. All applicants for registration will be examined at this time. For further information, blanks, etc., apply to the secretary,

F. R. HENSHAW, D. D. S.,
Middletown, Indiana.

NOTICE.

The next examination of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. D., January 29-30-31, 1907, beginning at 1:30 p. m. All candidates for examination must bring diploma from reputable dental colleges or affidavit of having been engaged in the practice of dentistry for at least three years immediately preceding said examination. Instruments and materials necessary to do all kinds of operative and prosthetic work will be needed at this examination. Vulcanizer and lathes will be furnished by the board. All applications must positively be in the hands of the secretary by January 22nd.

G. W. COLLINS, Secretary.

Vermillion, S. D.

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Board of Dental Examiners of Pennsylvania will conduct examinations in Harrisburg, December 11-14, 1906.

For papers and particulars address Dr. N. C. Schaeffer, Secretary Dental Council, Harrisburg, Pa.

TWENTY-FIFTH ANNIVERSARY REUNION, CELEBRATION AND CLINIC OF THE CHICAGO COLLEGE OF DENTAL SURGERY ALUMNI ASSOCIATION.

On the sixteenth and seventeenth days of January, 1907, the Alumni Association of the Chicago College of Dental Surgery will celebrate the twenty-fifth anniversary of the establishment of the college by holding a grand reunion and clinic. Arrangements have been made for a number of papers, a very extensive clinic, a theater party, and a banquet. A railroad rate of a fare and a third for the round trip from all points in the United States and Canada, on the certificate plan, has been arranged for.

A cordial invitation is extended to the general profession to be present, as well as all members of the Alumni Association and all graduates of the college.

R. C. BROPHY,
J. P. BUCKLEY,
Committee on Publicity.

AFTERMATH

Dentist an Author.—Dr. W. H. Lillibridge, a former dentist in Traer, Ia., has published a book entitled "Ben Blair," a story of western life.

Will Specialize.—Dr. F. C. Kemple, formerly of Erie, Pa., has located at 43 W. 48th street, New York City, for the exclusive practice of orthodontia.

Died in Dental Chair.—Albert Isch, aged 25 years, of Massillon, Ohio, died October 31, as the result of taking chloroform for the extraction of a wisdom tooth.

Southern California Dental Association, at Santa Barbara, elected Dr. J. D. Moody, of Los Angeles, president, and Dr. S. V. Doolittle, of Pomona, secretary.

Meets Mysterious Death.—Dr. C. H. Harvey, aged 57, one of the best known dentists of Erie, Pa., met death in a mysterious manner. His body was found in the bay.

Leaves Dentistry to Become Coal Operator.—Dr. J. C. Kamerly, the well-known dentist of Altoona, Pa., has left for Missouri, where he will operate mining properties he owns there.

Utica (N. Y.) Dental Society.—These officers were elected: President, Dr. H. M. Clapp; vice-president, Dr. F. P. Miller; secretary, Dr. J. C. Tooke; treasurer, Dr. Frank Simmons.

Change Locations.—Dr. A. J. Rickle, of Hastings, Mich., has gone to Northville, Mich., where he will locate for the practice of dentistry, and Dr. F. Carrothers, formerly of Northville, is now located in Hastings.

Southwestern Iowa Dental Association.—Officers elected are: Dr. Geo. Brooks, of Greenfield, president; Dr. F. H. Scranton, of Corning, vice-president; Dr. R. T. Will, of Red Oak, secretary, and Dr. King, of Villisca, treasurer. Next year the meeting place will be at Corning.

Students' Dental Society Formed.—The students of the Birmingham Dental College met October 13 and organized a dental society.

Dentist, Plumber and Undertaker.—Dr. T. F. Gilmore, of Princeton, Ind., has sold his plumbing business to E. E. Noble, and in the future will devote all of his time to his dental and undertaking businesses.—News Item.

College Men Make Changes.—Dr. T. E. Morrow, of the State Dental College, Dallas, Tex., has been called to St. Louis as registrar of the St. Louis Dental College, and Dr. T. G. Bradford has been elected acting dean in the State Dental College.

Dentist Loses a Finger.—Dr. E. A. Woelk, a dentist of Belleville, Mo., submitted to the amputation of the index finger of his left hand. While adjusting a glass tube in an instrument the tube broke and cut his hand. Septicaemia developed.

Accidents.—Dr. A. M. Marron, a dentist of Natchez, Miss., was accidentally shot while hunting, October 12. Dr. W. E. Pruner, a dentist of Leaf River, Ill., had the little finger of his right hand blown off by the accidental discharge of his shotgun, October 16.

Northern Illinois Dental Association.—The officers elected were: President, Dr. C. L. Snyder, Freeport; vice-president, A. S. Cheesman, Joliet; secretary, A. M. Harrison, Rockford; treasurer, H. G. Logan, Aurora. The next meeting will be held in Rockford in October, 1907.

English Humor.—"To clean the teeth use a mixture of emery and sweet oil, following it with plenty of lamp oil." This would seem to be queer advice; but as it is taken from a machinists' magazine, and from a chapter relating to circular saws, we have no doubt it is given in good faith.—British Dental Journal.

National Association Dental Examiners.—Officers elected for ensuing year are: President, G. E. Mitchell, Haverhill, Mass.; vice-president for the west, F. O. Hetrick, Ottawa, Kans.; vice-president for the east, H. B. McFadden, Philadelphia; vice-president for the south, F. A. Shotwell, Rogersville, Tenn.; secretary-treasurer, Chas. A. Meeker, Newark, N. J.

Complimentary Banquet Tendered Dr. William Jarvie.—Dr. Jarvie having announced his retirement from active practice, the officers and members of the Second District Dental Society tendered to him a complimentary banquet, on Saturday evening, November 17th, at the Waldorf-Astoria hotel, New York City. Many prominent members of the dental profession were present.

Announcement.—Dr. Albert Leland Le Gro is now located at 271 Woodward avenue, Detroit, Mich., for the general practice of dentistry.

Dr. W. H. Hague Dead.—Dr. William H. Hague died at his home in Delaware, Ohio, November 7, 1906, aged 63 years. He had practiced dentistry for about 43 years, and was prominent in the State Dental Society.

Deaths.—Dr. Edward C. Chase, a veteran dentist of St. Louis, died at his country home at Hillsboro, Ill., October 15, at the age of 58 years. Dr. Daniel B. Freeman, a pioneer dentist of Chicago, and former commander of G. A. R. post, died October 21, aged 64 years. Dr. Thomas B. Guier, a young dentist of Baltimore, Md., died October 27, after a lingering illness, suffering from tuberculosis.

Weddings.—Dr. Evan W. Mentzer, of Reading, Pa., was married October 20, to Miss Tacy Belle Sheiner, of Lebanon, Pa. Dr. Will Page Williams, of Brookneal, Va., and Miss Lucy Sydnor Williams were married October 18, at the home of the bride at Brookneal, the ceremony being performed by Rev. John B. Williams, father of the bride. Dr. Williams is located at Brookneal, Va. Dr. E. H. Raffensberger, Marion, Ohio, to Miss Kathryne Dietsch, September 20th.

To Investigate the Dental Needs of School Children.—At the last meeting of the Illinois State Dental Society the following was adopted: "Resolved, that a commission of five be, and the same is hereby created, whose purpose it will be to investigate the dental needs of the children of the schools of the state and co-operate with such other bodies whose duties carry them into such channels of investigation, and to report at our next annual meeting." The president appointed Drs. C. E. Bentley, T. W. Brophy, G. W. Cook, H. L. Whipple and C. E. Byington as such a commission.

New Dental Organization.—The following dentists of Livingston county (N. Y.) have organized, forming the Livingston Dental club: Dr. E. R. Griswold, Dr. F. W. Kuhn, Dr. G. H. Cutler, Dansville, N. Y.; Dr J. W. Cowan, Dr. C. J. Fraley, Geneseo, N. Y.; Dr. M. C. Bradley, Avon, N. Y.; Dr. E. A. Clapp, Livonia, N. Y.; Dr. W. H. Povall, Dr. G. T. Moore, Mt. Morris, N. Y.; Dr. Wm. Gamble, Wayland, N. Y. The object of the organization is to promote among the people, through the medium of the public schools and press a better knowledge of the care of the oral cavity and the preservation of the teeth; and for the advancement and elevation of dentistry and a mutual improvement of its members. Meetings are held quarterly with the different members of the club. Dr. J. W. Cowan was elected president, Dr. G. T. Moore, secretary-treasurer.

Honored by Kaiser.—Ann Arbor dental students who are in search of material for a thrilling college yell are recommended to inspect the title of "kaiserlicher geheimer medizinrat," which the kaiser has just conferred on Dr. W. D. Miller, the newly-appointed dean of the College of Dentistry, University of Michigan. The imposing title means, "imperial privy medical councillor, professor and doctor."

Ohio State Board Prosecutions.—During the month of October the Ohio Board of Dental Examiners secured the following convictions for illegal practice of dentistry: Howard E. DeWees, of Malvern; Luther P. Gross, of Tiffin, and Cameron C. Gadsby, of Cleveland, each being fined $50 and costs. I Irving Unger, of Cleveland, was prosecuted in police court, October 30th, but decision reserved until November 12th. The Ohio board has been very energetic in looking after violators of their dental law, and they have met with unusual success, as they have only lost one case, covering a period of more than four years, and this case was one of a legally-qualified physician (a quack with a tent and a "show"), who was extracting teeth indiscriminately. A technicality lost this case, as the affidavit was not broad enough to permit of introducing evidence to show that he was "practicing dentistry as a specialty," and otherwise he was protected as a "legally qualified physician or surgeon."

The Larger Vision.—"A larger vision among men will develop harmony, and greater harmony will bring more certain happiness. There can be, there is, no loftier mission on earth for any man than to smooth the troubled waters of bitterness and strife among his fellows. Take out of the world the petty bickerings and small meannesses of human experience, the envy, jealousy, spite and hatred—take these away and humanity could meet the larger issues of pestilence, or flood, or disaster or crime with greater equipose and more effectiveness. When men become broad enough to look out beyond self and see the need of harmonizing the great chaos of humanity they will not require a calamity to stir their souls and fill them with loving kindness. The chief needs of the human race in small as well as large events are unselfishness, charity, and above all, an abounding love. To be unselfish enough to think of the needs and rights of others, to spread out through humanity that delightful self-sacrifice and consideration which we sometimes see so perfectly typified in family groups; to be charitable enough to yield to others the privilege of holding opinions opposite to those of ours, to recognize the fact that we cannot all believe alike and that each is entitled to his own particular point of view so long as it does not work to the detriment of others—these are the things which go far to make up that larger vision of life which should be the ultimate aim of all.—Dr. C. N. Johnson, in address given at banquet tendered Dr. L. P. Haskell, May, 1906.

"The Preposterous American Dentists."—M. Vernon Ponsonby in his book, "The Preposterous Yankee," has the following to say about "The Preposterous American Dentists": "We have heard a great deal in England about the cleverness of American dentists. Some of these dentists come to England; we are sorry, but they do. They paint enormous signs outside their offices and put up huge notice boards on which copies of the Stars and Stripes are painted. They then proceed to advertise, boast, and brag. The American dentist is an excellent blacksmith. He knows how to saw, and he knows how to tinker, file and solder. One of his specialties is to bore holes in sound teeth and then fill them up with gold. He cares very little about his art for art's sake. His business is to yank out teeth at so much a tooth, to put on crowns at so much a crown, and to work wholly and altogether from a standpoint of the journeyman bricklayer or plasterer." Mr. Ponsonby does not let the dentist rest. Later on he says an English dentist who was asked to supply a lost tooth for a pug dog would resent the proposition. "He might even administer a punch in the eye to the person who made the suggestion. He would regard it as unprofessional. But the American dentist would grab the dog and fill him full of teeth and vulcanite him in five minutes. In fact, he regards it as rather a feather in his cap, because usually he can get a good notice of the event, with a picture of his father, mother, wife, deceased mother-in-law, and the house in which he lives, in one of the 5-cent Sunday papers. For the same reason he will often bribe an actress to permit him to set a diamond in one of her front teeth."

Burglaries.—Burglars robbed the office of Dr. Walter G. Green, of Ashtabula, O., securing valuable materials worth $200 and damaging a dental cabinet valued at $125. Dr. Outhank's office in Quincy, Ill., was entered and a quantity of gold filling was taken. An attempt was also made to enter the office of Dr. Albert Sohm. The office of Dr. L. A. Cummings, of Kansas City, Kan., was entered and $25 worth of gold fillings were taken. About $20 worth of gold plate was stolen from the office of Dr. W. M. Bourn, of St. Joseph's, Mo. Dr. E. C. Bock, of Fairfield, Ia., was robbed of $60 worth of gold, and Drs. Punton and Edwards, of Mount Pleasant, Ia., are losers to the extent of $12 in cash and a large amount of gold leaf and filling. The office of Dr. McCleery, of Beatrice, Neb., was entered and a considerable amount of gold filling was taken. The office of Dr. H. S. Murphy, of Fremont, Neb., was robbed of $50 worth of gold. The offices of Drs. King, Baird and Hunter were also visited, but nothing was secured.

A Public Dental Library in the City of Columbus, Ohio.--The trustees of the new Columbus Carnegie Library building, a handsome structure costing $250,000, have set apart a room 40 by 60 feet for the exclusive use of a dental and medical library. Columbus being centrally located and of easy access to the majority of the dentists in the state, should be the home of what the dental profession has hitherto been without, a library complete in all the literature of the profession, making it invaluable for research and reference. The local dentists have organized a Dental Library Association, for the express purpose of bringing this matter to a successful issue, and the work thus far accomplished far exceeds our expectations. The Columbus dentists alone have donated $500 in cash and a number of books and magazines. To make this library complete in embracing all known works pertaining to our specialty and complete files of all the journals published, we desire the co-operation of every dentist in the state. Any old and rare works, copies of old journals, etc., will be gratefully received, inscribed with the name of the donor, and recorded to his credit in the library catalogue. Please communicate with us concerning any literature you may have that you can donate to this cause, giving titles and authors of books, names and dates of journals, etc. In case of duplication they will be valuable for exchange with other libraries. Dr. W. H. Todd, president; Dr. Edward C. Mills, secretary, Y. M. C. A. Bldg., Columbus, Ohio.

Patents of Interest to Dentists, Recently Granted.—

832587—Artificial tooth, Robert Brewster, Chicago, Ill.

832975—Toothbrush holder, Eli J. Hyde, Spokane, Wash.

832955—Dental plugger, Henry D. Bultman, New York, N. Y.

833204—Dental bite-taker, Lyter H. Crawford, New York, N. Y.

833254—Dental crown construction, Carl A. Skalstad, Chicago, Ill.

832528—Removable dental bridge-work, Ernest C. Benett, New York.

831943—Dental handpiece, Chester M. Freeman, Brookline, Mass.

833044—Dental instrument, Thomas Goodhugh, Sutton, London, England.

832790—Machine for beating leaf metal, Jakob Heinrich and H. Dorsch, Furth, Germany.

831960—Artificial denture, Phillip B. Lesemann, Nashville, and S. J. Lesermann, Altamont, Ill.

833375—Dental instrument for slitting and removing cap-crowns, Leo Dollar, Philadelphia, Pa.

Copies of above patents may be obtained for ten cents each, by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.